DOCUMENT RESUME

ED 438 380 UD 033 350

AUTHOR Borman, Geoffrey D.; Stringfield, Sam; Rachuba, Laura
TITLE Advancing Minority High Achievement: National Trends and Promising Programs and Practices. A Report Prepared for the National Task Force on Minority High Achievement, the College Board.
INSTITUTION Johns Hopkins Univ., Baltimore, MD. Center for Social Organization of Schools.
PUB DATE 1998-06-00
NOTE 185p.
PUB TYPE Numerical/Quantitative Data (110) -- Reports - Research (143)
EDRS PRICE MF01/PC08 Plus Postage.
DESCRIPTORS *Academic Achievement; Achievement Gains; Black Students; Educational Improvement; *Educational Practices; Elementary Education; *Elementary School Students; Hispanic Americans; *Minority Groups; Tables (Data)
IDENTIFIERS African Americans; Latinos; *Reform Efforts

ABSTRACT

This report documents recent national progress in advancing the achievements of elementary-aged minority children, the potential for replicable whole-school reform designs to contribute to this advancement, and the individual, classroom, and school characteristics that distinguish those minority students who attain high levels of achievement. The primary focus of the analyses is on the progress of Latino and African American students who begin their academic careers at relatively high achievement levels. The analyses are based on data from the national study, "Prospects", and its companion study of exemplary school programs, "Special Strategies." As results from other national studies have indicated, the results of this study suggest that minority students are poorly represented among the nation's highest achievers. Results suggest that high-achieving students of all racial/ethnic groups, who are from lower socioeconomic status backgrounds, begin a process of disengagement from school from the time they begin first grade. It also appears that the achievement of boys is more likely to suffer than that of girls. Analyses of the "Special Strategies" data indicate that replicable, whole-school reform designs hold considerable promise for advancing the learning of all African American students within high poverty schools. Findings also suggest that many aspects of schools and classrooms that are associated with minority high achievement are readily alterable. Schools and families can work toward promoting many of the individual attributes that tended to characterize the most successful minority students from the study. Two appendixes contain student-level and school-level composite scores for the study questionnaire and summaries of the hierarchical model analyses of achievement and engagement. (Contains 53 tables, 17 figures, and 75 references.) (SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 438 380

Advancing Minority High Achievement:

National Trends and Promising Programs and Practices

A Report Prepared for the National Task Force on Minority High Achievement
The College Board

Geoffrey D. Borman, Sam Stringfield, & Laura Rachuba

Johns Hopkins University
Center for Social Organization of Schools

June 1998

UD033350

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

J H Hollifield
Johns Hopkins U - CSOS

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Advancing Minority High Achievement:

National Trends and Promising Programs and Practices

A Report Prepared for the National Task Force on Minority High Achievement
The College Board

Geoffrey D. Borman, Sam Stringfield, & Laura Rachuba

Johns Hopkins University
Center for Social Organization of Schools

June 1998

Table of Contents

List of Tables and Figures ii

Executive Summary vii

Section 1. Introduction 1

Section 2. Method 18
Data Sources 19
Analytical Methods 24
Measures 27

Section 2.1. Development of Student Characteristic Measures 29
Composite Variable Descriptions 29
Single-Item Variable Descriptions 32

Section 2.2. Development of Classroom-level Variables 35
Composite Variable Descriptions 35
Single-Item Variable Descriptions 37

Section 2.3. Development of School-Level Variables 39
Composite Variable Description 39
Single-Item Variable Descriptions 39

Section 3. Results 42
The Representation of Minority Students Among High-Achievers 42
Longitudinal Trends for Math, Reading, and Student Engagement Score Gaps 46
First-Grade Cohort Results 49
Third-Grade Cohort Results 58
Longitudinal Trends for High Achievers from High- and Low-Poverty Schools 66
Analyses of Special Strategies for African American Students 75
Analyses of Individual, School, and Classroom Characteristics 81

Section 4. Summary of Results and Conclusion 112
Summary of Results 112
Conclusion 117

References 121

Appendix A 130

Appendix B 144

List of Tables and Figures

Section 2

Table 1: Summary of *Prospects* Longitudinal Samples

Table 2: Comparison of Longitudinal Samples to 1991 Cross-Sectional Samples, First-Grade Cohort

Table 3: Comparison of Longitudinal Samples to 1991 Cross-Sectional Samples, Third-Grade Cohort

Section 3

Table 4: Student Background Attributes: Factors/Variables Derived from *Prospects* Survey Instruments / Data File

Section 4

Table 5: Classroom-level Attributes: Factors/Variables Derived from *Prospects* Survey Instruments / Data File

Section 5

Table 6: School-level Attributes: Factors/Variables Derived from *Prospects* Survey Instruments / Data File

Section 6

Table 7: Proportions of High Achievers by Race/Ethnicity and Year, First-Grade Cohort Math

Table 8: Proportions of High Achievers by Race/Ethnicity and Year, First-Grade Cohort Reading

Table 9: Proportions of High Achievers by Race/Ethnicity and Year, Third-Grade Cohort Math

Table 10: Proportions of High Achievers by Race/Ethnicity and Year, Third-Grade Cohort Reading

Figure 1: Mean Standardized Math Score Gaps by Grade by Race, First-Grade Cohort

Figure 2: Mean Standardized Reading Score Gaps by Grade by Race, First-Grade Cohort

Figure 3: Mean Standardized Engagement Score Gaps by Grade by Race, First-Grade Cohort

Figure 4: Mean Standardized Math Score Gaps by Grade by Race, Third-Grade Cohort

Figure 5: Mean Standardized Reading Score Gaps by Grade by Race, Third-Grade Cohort

Figure 6: Mean Standardized Engagement Score Gaps by Grade by Race, Third-Grade Cohort

Figure 7: Percent of Children by Race/Ethnicity in High- and Low-Poverty Schools, First-Grade Cohort

Figure 8: Mean Math Scale Scores by Grade by School Poverty Level, First-Grade Cohort, 50th Percentile or Greater

Figure 9: Mean Reading Scale Scores by Grade by School Poverty Level, First-Grade Cohort, 50th Percentile or Greater

Figure 10: Mean Engagement Scores by Grade by School Poverty Level, First-Grade Cohort, 50th Percentile or Greater

Figure 11: Percent of Children by Race/Ethnicity in High- and Low-Poverty Schools, Third-Grade Cohort

Figure 12: Mean Math Scale Scores by Grade by School Poverty Level, Third-Grade Cohort, 50th Percentile or Greater

Figure 13: Mean Reading Scale Scores by Grade by School Poverty Level, Third-Grade Cohort, 50th Percentile or Greater

Figure 14: Mean Engagement Scores by Grade by School Poverty Level, Third-Grade Cohort, 50th Percentile or Greater

Figure 15: Mean Scale Scores by Grade and by Group for the First-Grade Cohort

Figure 16: Mean Scale Scores by Grade and by Group for the Third-Grade Cohort

Figure 17: Mean Scale Scores by Grade and by Group of High-Achieving Students at or above the 50th Percentile in Third Grade

Table 11: School and Classroom Characteristics by Race and Baseline Math Achievement, First-Grade Cohort

Table 12: School and Classroom Characteristics by Race and Baseline Reading Achievement, First-Grade Cohort

Table 13: School and Classroom Characteristics by Race and Baseline Math Achievement, Third-Grade Cohort

Table 14: School and Classroom Characteristics by Race and Baseline Reading Achievement, Third-Grade Cohort

Table 15: School and Classroom Characteristics by Race and Baseline Math Achievement, First-Grade Cohort

Table 16: School and Classroom Characteristics by Race and Baseline Reading Achievement, First-Grade Cohort

Table 17: School and Classroom Characteristics by Race and Baseline Math Achievement, Third-Grade Cohort

Table 18: School and Classroom Characteristics by Race and Baseline Reading Achievement, Third-Grade Cohort

Appendix A

Table A1: Student-level Attributes; Student Questionnaire; Cohort 3

Table A2: Student-level Attributes; Student Profile Questionnaire; Cohort 1

Table A3: Student-level Attributes; Student Profile Questionnaire; Cohort 3

Table A4: Student-level Attributes; Parent Questionnaire; Cohort 1

Table A5: Student-level Attributes; Parent Questionnaire; Cohort 3

Table A6: Classroom-level Attributes; Classroom Teacher, R/E/LA; Cohort 1

Table A7: Classroom-level Attributes; Classroom Teacher, R/E/LA; Cohort 3

Table A8: Classroom-level Attributes; Classroom Teacher, math; Cohort 1

Table A9: Classroom-level Attributes; Classroom Teacher, math; Cohort 3

Table A10: Classroom-level Attributes; CTBS/4 and Classroom Teacher, math; Cohort 1

Table A11: Classroom-level Attributes; CTBS/4 and Classroom Teacher; math; Cohort 3

Table A12: Classroom-level Attributes; CTBS/4 and Classroom Teacher, R/E/LA; Cohort 1

Table A13: Classroom-level Attributes; CTBS/4 and Classroom Teacher, R/E/LA; Cohort 3

Table A14: School-level Attribute; Classroom Teacher, math; Cohort 1

Table A15: School-level Attribute; Classroom Teacher, math; Cohort 3

Table A16: School-level Attribute; Classroom Teacher, R/E/LA; Cohort 1

Table A17: School-level Attribute; Classroom Teacher, R/E/LA; Cohort 3

Appendix B

Table B1: Summary of Two-Level Hierarchical Model Predicting Math Achievement, Cohort 1 ≥50%ile

Table B2: Summary of Two-Level Hierarchical Model Predicting Math Achievement, Cohort 1 ≥75%ile

Table B3: Summary of Two-Level Hierarchical Model Predicting Reading Achievement, Cohort 1 ≥50%ile

Table B4: Summary of Two-Level Hierarchical Model Predicting Reading Achievement, Cohort 1 ≥75%ile

Table B5: Summary of Two-Level Hierarchical Model Predicting Student Engagement, Cohort 1 ≥50%ile

Table B6: Summary of Two-Level Hierarchical Model Predicting Student Engagement, Cohort 1 ≥75%ile

Table B7: Summary of Two-Level Hierarchical Model Predicting Math Achievement, Cohort 3 ≥50%ile

Table B8: Summary of Two-Level Hierarchical Model Predicting Math Achievement, Cohort 3 ≥75%ile

Table B9: Summary of Two-Level Hierarchical Model Predicting Reading Achievement, Cohort 3 ≥50%ile

Table B10: Summary of Two-Level Hierarchical Model Predicting Reading Achievement, Cohort 3 ≥75%ile

Table B11: Summary of Two-Level Hierarchical Model Predicting Student Engagement, Cohort 3 ≥50%ile

Table B12: Summary of Two-Level Hierarchical Model Predicting Student Engagement, Cohort 3 ≥75%ile

Table B13: Summary of Three-Level Hierarchical Model Predicting Math Achievement for African American Students from High-Poverty Prospects Schools and for African American Students from Special-Strategies Whole-School Reform Schools, Cohort 1

Table B14: Summary of Three-Level Hierarchical Model Predicting Reading Achievement for African American Students from High-Poverty Prospects Schools and for African American Students from Special-Strategies Whole-School Reform Schools, Cohort 1

Table B15: Summary of Three-Level Hierarchical Model Predicting Math Achievement for African American Students from High-Poverty Prospects Schools and for African American Students from Special-Strategies Whole-School Reform Schools, Cohort 3

Table B16: Summary of Three-Level Hierarchical Model Predicting Reading Achievement for African American Students from High-Poverty Prospects Schools and for African American Students from Special-Strategies Whole-School Reform Schools, Cohort 3

Table B17: Summary of Three-Level Hierarchical Model Predicting Math Achievement for African American Students from High-Poverty Prospects Schools and for African American Students from Special-Strategies Whole-School Reform Schools, Cohort 3 ≥ 50th %ile

Table B18: Summary of Three-Level Hierarchical Model Predicting Reading Achievement for African American Students from High-Poverty Prospects Schools and for African American Students from Special-Strategies Whole-School Reform Schools, Cohort 3 ≥ 50th %ile

Executive Summary

This report documents recent national progress in advancing the achievements of elementary-aged minority children, the potential for replicable whole-school reform designs to contribute to this advancement, and the individual, classroom, and school characteristics that distinguish those minority students who attain high levels of achievement. The primary focus of our analyses is on the progress of Latino and African American students who begin their academic careers at relatively high achievement levels. The analyses are based on data from the national study *Prospects* and its companion study of exemplary school programs, *Special Strategies*. The results from this report address five central questions:

- To what extent are minority students in the first through sixth grades represented among high-achievers from 1991 through 1994?
- Do the achievement gaps between initially high-achieving minority and White students change as they progress through school?
- Do replicable, externally developed, whole-school reforms improve the longitudinal learning rates of African American students who attend high-poverty schools?
- What are the typical characteristics of schools and classrooms attended by the nation's minority and White students, and by high-achieving minority and White students?
- In what ways do the individual, classroom, and school characteristics of high- and low-achieving minority students differ?

Recent research suggests that minority-white achievement gaps have been widening among cohorts born after 1978. Also, some evidence indicates that the achievement scores of initially similar African American and white students diverge as they proceed through school.

Although recent educational reforms emphasize academic "excellence" for all students, several researchers have noted that these initiatives do not provide coherent plans for promoting minority students' success. Combined with projections indicating that the total proportion of non-Hispanic White children in America is expected to decrease from seven in ten to one in two by 2020, these findings highlight the importance of an improved understanding of the progress toward, and correlates of, minority high achievement .

As results from other analyses of national data sets have indicated, the results from this study suggest that minority students are poorly represented among the nation's high achievers. Furthermore, some evidence suggests that poor and African American students who begin their early school years at or above the 50th percentile do not keep pace with the achievements of more advantaged and White students. Although this evidence is not consistent, the results do consistently suggest that high-achieving students of all racial/ethnic groups who are from lower SES backgrounds begin a process of disengagement from school from the time they begin first grade. It also appears that boys' achievements are more likely to suffer over time than girls' achievements, and that boys are more likely to disengage from school.

Similar to findings for all students who attend high-poverty schools, the results suggest that high-achieving minorities lose ground relative to their peers in low-poverty schools across the first through third grades. Although, high achievers from low- and high-poverty schools learn at similar rates from third through sixth grade, high-achievers from high-poverty schools disengage from school at faster rates.

Analyses of the *Special Strategies* data indicate that replicable, whole-school reform designs hold considerable promise for advancing the learning of all African American students within high-poverty schools. Although the results suggest that high-achieving African

Americans may benefit from these reforms, due in part to small sample sizes, these findings did not reach statistical significance. Future research is needed to examine the effectiveness of existing reforms for high-achieving minorities, and to identify other programs that foster high achievement.

Many aspects of schools and classrooms that are associated with minority high achievement are readily alterable. For instance, the findings suggest that the following conditions hold promise:

- greater emphasis on student-centered, and advanced-skills oriented curriculum and instruction;
- improved access to gifted and talented programs;
- greater interaction with peers who share the achievement ideology;
- improved funding and availability of school resources;
- greater racial and socioeconomic integration.

However, again, carefully controlled studies of high-achieving minority students are needed to ascertain the efficacy of these various policy options.

Finally, schools and families may work toward promoting many of the individual attributes that tended to characterize the most successful minority students from our study. For instance, teachers should attempt to design engaging school activities and expect all students to complete school work and participate fully in the classroom. Also, parents of high-achieving minorities should communicate high educational expectations to their children, and should attempt to minimize the frequency of moves, which may disrupt students' school progress. Both parents and schools should attempt to foster the development of children's affective attributes,

such as an internal locus of control, a more positive self-concept, greater self-efficacy in math and reading, and a more positive attitude toward school.

Perhaps most importantly though, future studies should explore these issues and others that may be related to advancing minority students' achievements. Existing national data sets are quite limited, in that few high-achieving minority students are represented in them. In other cases, it is impossible to estimate with any reliability the progress of groups of initially high achieving students, such as Native Americans. Considering the recent historical trends in achievement, and considering the lack of research on effective classroom and school practices for high-achieving minorities, the most profitable efforts may be those that research and develop school-based programs and reforms that promote academic excellence for minority students.

Section 1. Introduction

Not long ago, minority students were not guaranteed basic access to integrated or high-quality separate schools. The relatively well-known struggle of African Americans culminated less than 50 years ago in the 1954 *Brown* v. *Board of Education* decision. Also, Montgomery & Rossi (1994) pointed out the lesser-known victory of Mexican-Americans in the Lemon Grove case, which has been regarded as the first successful desegregation case in the United States. Earlier in the 20th century American Indians worked to refine and enforce the 1934 Johnson-O'Malley Act, which ordered public schools to enroll Native children customarily served by Bureau of Indian Affairs schools. Although the struggle for equal educational opportunity continues today, the 1960s, 1970s, and 1980s were marked by progress in integrating America's schools, and by the significant educational investments of the "Great Society" programs.

Analyses of national achievement data indicate that these initiatives were associated with progress toward equality in educational outcomes. During this era the achievement gaps closed between minority and White students and between poor and advantaged children (Burton & Jones, 1982; Humphreys, 1988; Jones, 1984; Miller, 1995; Phillips, Crouse, & Ralph, in press). Also, based on a meta-analysis of nearly 30 years of evaluation results from the largest federal compensatory education program, Title I of the Elementary and Secondary Education Act of 1965, Borman & D'Agostino (1996) concluded that participants' achievement gains increased significantly as the program matured. However, the progress made during this era appears to have stalled, as researchers such as Phillips et al. have found that the gaps between African American and White students' reading and vocabulary achievements have widened among student cohorts born after 1978.

In addition to the role schools have played in historical achievement trends, researchers have cited age-related trends in minority-White test score differences as evidence concerning the role schools may play in explaining the gap. Past reviews by Loehlin, Lindsay, & Spuhler (1975) and by Gordon (1984) suggest that the IQ gap between African Americans and Whites remains more or less constant with age. However, a more recent meta-analysis by Phillips et al. (in press) indicates that the achievement scores of initially similar African American and White students diverge as they proceed through school. Phillips and her colleagues concluded that White students who begin school with true test scores at the population mean can be expected to finish high school with test scores that remain at the population mean, but African American students who begin school with the same test scores finish high school with math and reading scores .34 and .39 standard deviations, respectively, below the population mean.

With the possibility that the achievement gaps may widen as minority students progress through school, and with the recent historical trend toward a widening gap, current and future educational reform efforts must go beyond simply guaranteeing access. Indeed, the focus in education during the late 1980s and 1990s has been on school restructuring and improvement. The roots of this reform movement may be traced back fifteen years ago to the widely cited report *A Nation at Risk*, which warned that America's students achieve at lower skill levels than students in other industrialized nations (National Commission on Excellence in Education, 1983). To combat the "rising tide of mediocrity," and to ensure that the educational system provides the necessary human capital to secure America's economic well-being into the future, rather than access or equity, policy leaders increasingly have called for universal "excellence" in education. However, as some researchers have pointed out, the reforms aimed at achieving excellence typically do not provide coherent plans for supporting the educational advancement of

the growing populations of minority and poor children (McCollum & Walker, 1992; Swift, 1986). As McDill, Natriello, & Pallas (1986) warn, without adequate supports for students placed at risk, it is likely that current reforms, which push toward raising academic standards, will cause more students to fail, to disengage, and eventually, to dropout.

The importance of guaranteeing excellence for children of color is becoming increasingly salient as America moves into the 21st century. Based on recent census estimates, Natriello, McDill, & Pallas (1990) stated that the total proportion of non-Hispanic White children is expected to decrease from seven in ten to one in two by 2020. Therefore, the futures of growing numbers of children, and the future of the nation, depend on ensuring that groups historically underserved by American education have the opportunities and supports to achieve academic excellence.

What factors may promote minority students' high achievement? Though few researchers or educational program developers have established coherent models or programs that address the question specifically, there is literature that may shed light on the question. First, some theories focus on individual characteristics of students, such as resilience, and identification and engagement with school, and on the social supports from peers, families, and communities that may promote these behaviors. Second, theories identify classroom characteristics that hold promise for engaging minority students and for advancing their achievements. Third, school variables, such as resources and climate, may be important predictors of students' outcomes. Finally, we discuss the potential of several replicable educational programs to promote minority students' high achievement. Because most of this research has focused on the experiences of African American students, our focus is similar.

However, many of the findings may be relevant to other minority groups, including Latino and Native American students.

Researchers consistently find that minority students are represented disproportionately among those who are economically disadvantaged (Miller, 1995). Children living in poverty have less access to formal learning opportunities, fewer resources, greater health problems, and developmental delays, all of which negatively impact educational outcomes (Ford, 1996). Although being a minority student is not a risk factor in and of itself, as Montgomery & Rossi (1994) note, experiencing adverse treatment in or outside the classroom because of one's race or ethnicity is a risk factor. Such variables or "risk factors" obviously impede the achievement of minority children.

Cultural differences also contribute to the academic struggle of minority children. Schools attempt to assimilate minority students to mainstream values without considering the potential ramifications of doing so. When the values of the home and community are incongruent with the values of the school, minority children may experience confusion, stress, and adjustment problems that ultimately result in low self-esteem and poor academic performance (Ford, 1996; Gordon & Yowell, 1992). African American students who do achieve may be viewed as assimilating and run the risk of being accused of "selling out" or "acting White" by their African American peers. Peer rejection can be very damaging for African American youth for whom the need for peer affiliation is very strong (Ford, 1996).

Despite these and other obstacles that minority youth may face, there are those who achieve academic success through their resilience. Resilience is defined as the ability to succeed regardless of challenging or threatening circumstances. Resilient children are able to do well in school despite family, community, or social circumstances that are not congruent with academic

success. What enables these children to achieve despite the obstacles to their success? The following characteristics have been found to foster resilience: an internal locus of control and high self-esteem (Finn & Rock, 1997); strong interpersonal skills, a capacity to be responsive to others, a high level of activity, good problem-solving skills, flexibility, independence, a clear sense of purpose, and a good parent-child relationship (Wang, Haertel, & Walberg, 1993). Wang and her colleagues suggested that schools may foster students' resilience by defining clear educational goals, encouraging students to take responsibility for helping each other, having adequate learning resources, and keeping parents actively engaged and informed.

Closely related to research on the factors associated with resiliency, a few studies have identified the characteristics of high-achieving African Americans and their under-achieving counterparts. For instance, Lee, Winfield, & Wilson (1991) reported that high achievers (defined as scoring above the national average in reading achievement) tend to come from families of higher social class, with a higher proportion of working mothers. Lee and her colleagues found that the schools attended by high-achieving African American students were comprised of higher SES families, had higher student commitment, offered enriched curriculum more often, and had a lower proportion of students in remedial reading. A positive attitude toward achievers (Ford & Harris, 1996) and toward school (Trotter, 1981), strong belief in the tenets of the achievement ideology, and a low incidence of psychological issues, such as fears and anxieties (Ford & Harris, 1996) also characterize high-achieving minority students.

In contrast to resilience, researchers increasingly conceptualize poor educational performance as the outcome of a process of academic disengagement, which may begin as early as a child's entry into school (Finn, 1989; Natriello, 1984). In a comparison of the relationship between self-esteem and achievement for a national sample of White, African American, and

Latino students, Osborne (1997) found that, while self-esteem was highest among African Americans at each time point, its correlation with achievement and grades decreased most dramatically for African American males between eighth and twelfth grade. This result suggests that as African American males progress through school their sense of self becomes less and less tied to their academic performances and achievements. To improve student achievement and engagement, schools must foster investment behaviors, such as encouraging students' involvement and interest in school-related activities (Montgomery & Rossi, 1994).

In addition to the importance of individual factors to students' patterns of engagement and achievement, certain cultural and social factors play key roles. Ogbu (1985) contends that African Americans "do not believe as strongly as Whites that school credentials are sufficient" (p. 57) for attaining success in society. According to Ogbu, African American students' low achievement is due to how they are treated educationally, socially, politically, and economically. Therefore, it is highly relevant that theories of engagement, such as Tinto's (1975), focus on incentives for student involvement. If students perceive low incentives and rewards for academic engagement and achievement, as Ogbu's theory postulates, they are likely to be discouraged from persisting and engaging in school. Montgomery & Rossi (1994) state that successful students often have parents, teachers, and peers who "push" them to do their best academically. These students know that if they fail to engage and persist, they may experience undesirable outcomes such as reproaches from teachers, loss of privileges at home, or criticism from their friends. Similarly, Ford (1996) states that the high expectations of parents and affiliations with peers who share a strong achievement orientation are important social factors that prevent underachievement among gifted African American students.

Researchers have consistently found the troubling fact that many social risk factors may reside within the confines of the student's classroom. Although Black English is considered by many linguists to be a legitimate, rule-governed, and fully developed dialect, and although Black English speakers are highly competent language users when speaking their vernacular, many professionals consider the dialect inferior to standard English (Ford, 1996). Taylor (1983) found that stronger negative attitudes toward Black English among teachers were significantly associated with lower evaluations of their African American students' reading comprehension levels. Similarly, Allington (1980) and Brophy (1988) indicated that teachers' negative attitudes toward Black English are associated with several behaviors, such as calling on students who speak Black English less frequently, that contribute to African American students' disengagement and underachievement.

Other researchers have found evidence that minority students, in general, are exposed to teacher behaviors that, in some cases intentionally and in other cases unintentionally, reflect prejudiced or discriminatory attitudes. First, in predicting eight indicators of second-generation discrimination, Meier, Stewart, & England (1989) found that the greatest single predictor was the racial distribution of the teaching faculty. In 43 of 44 statistical models, the researchers found that higher percentages of African American teachers were associated with lower levels of second-generation discrimination. Second, in a review of the literature on teacher expectancy, Irvine (1990) concluded that teachers, White teachers in particular, held more negative expectations for African American students than for White students. Furthermore, teachers held more negative views regarding the personality characteristics, traits, abilities, behaviors, and potentials of African American students. Similarly, Dusek & Joseph (1986) reported that

African American and Mexican American students were not expected to perform as well as White students by their teachers.

All teachers tend to communicate their expectations to students in either subtle or overt ways. Some of the classroom experiences of students for whom teachers hold low expectations include: (1) being called on less frequently; (2) when called on, provided less time to respond; (3) given the answer rather than helped to solve the problem themselves; (4) criticized more often; (5) praised less; (6) paid less positive attention but disciplined more strictly (Brophy, 1983). Research shows that African American students are aware of social injustices and believe that they have to work harder than their White classmates to succeed (Ford & Harris, 1996). In response to racism, African American youth may react in anger and rebellion. They may deliberately perform poorly in school, rebel against educators, and shun mainstream values and behaviors (Ogbu, 1988).

The work of Dreeben (1987), among others, has shown the adverse consequences of the instructional strategies that are consonant with teachers' low expectations. Among first-grade students, Dreeben found the quality of instruction of African American students was, on average, much lower that that received by their White counterparts. Correspondingly, the African American students' achievement outcomes were much poorer than those for their White peers. However, when African American and White students received similar instruction, they attained comparable reading achievements.

More recent research on instruction for minority and poor students has revealed similar findings, and has stressed the efficacy of alternative instructional techniques that place an emphasis on meaning and understanding. Traditional instruction for minority and poor students often assumes that the problem lies with the individual learner and the deficiencies of his or her

background. According to this line of reasoning, the learner is brought into the mainstream through more of what are assumed to correct unfocused learning habits: carefully sequenced curricula, drill and repetition, tight control by teachers, and an emphasis on basic-skills remediation (Knapp, 1995). Instead, Knapp's research in racially diverse high-poverty classrooms demonstrated that the more classrooms focused on teaching for meaning -- "that is, geared mathematics instruction to conceptual understanding and problem solving, reading instruction to comprehension, and writing instruction to composing extended text" (p. 142) – the more likely students were to demonstrate proficiency in both higher-order and basic-skill areas.

Multicultural instruction attacks similar traditional assumptions about minority students' apparent learning deficiencies. Winfield (1986) states that nonconstructive teachers begin with the assumption that students are inherently limited in their abilities to learn because of their backgrounds. However, teachers who respond constructively believe that all students can learn. In addition though, a multicultural approach involves the degree to which teachers take active, self-conscious steps to deal with student differences, rather than simply ignoring them (Shields, 1995). Teachers who respond actively to students' backgrounds believe that they understand the important characteristics of the cultures and world experiences of the children they are teaching, and they use teaching strategies and curricular materials that reflect their convictions. Banks & Banks (1993) note several levels of integration of multicultural content into the curriculum, which distinguish superficial and more meaningful treatments. Specifically, the multicultural curriculum may range from focusing on heroes, holidays, and discrete cultural elements and events, to enabling students to make decisions on important social issues, and to take actions to help solve them. As Ford (1996) stated, gifted and underachieving African American students find the infusion of multicultural education into the classroom content empowering. Whether

one considers teaching for meaning or multicultural education, both instructional methods stress elements of a student-centered approach to learning, which places value on learning activities that are both challenging and relevant.

At the school-level, various studies have documented vast between-school differences in educational expenditures that have spanned several decades (e.g., Kozol, 1991; Sexton, 1961). Given the prevailing method for funding schools, which relies on the wealth of the local tax base, these differences tend to favor wealthier communities and place poor and minority communities at a disadvantage. A meta-analysis by Hedges, Laine, & Greenwald (1994) showed systematic positive relations between resource inputs and school outcomes. Their analyses of the magnitudes of these relations suggested that the median regression coefficient was large enough to be of practical importance. From a qualitative perspective, Kozol (1991) documented devastating differences between the schools attended by minority students within the most racially isolated and disadvantaged areas in the nation and the schools in neighboring suburban communities attended by their more advantaged White peers. These differences in funding directly affect the educational resources that schools are able to provide their students, the training and experience levels of the teaching staffs they are able to recruit and retain, the quality of their facilities, and their overall climates. As a consequence of these differences, the achievements of students attending under-funded schools suffer. In other words, as Hedges and his colleagues found, money clearly matters in education.

During the school restructuring movement of the past two decades, numerous school reform plans have been designed by external teams of developers and by local educators. Many of these reform designs have targeted low-achieving minority students. Although low-achieving minority students participating in programs such as Reading Recovery have benefited,

understandably such efforts are geared toward goals such as helping students read at grade level rather than helping students reach the top quartile in achievement. However, there are growing numbers of programs that target the entire school, such as Comer's School Development Program, Success for All, Paideia, the Core Knowledge Curriculum, the Calvert School, and Title I schoolwide programs. Due to the fact that these models reach all students in the school, rather than only low-achievers, that alone may suggest that they hold more promise than targeted programs for helping high-achievers and other students attain their highest academic potentials. In addition though, although the explicit objectives of these programs do not include increasing the proportion of high-achieving minority students, some of their characteristics appear to hold some promise for achieving this goal.

Specifically, some reforms, such as Paideia, Core Knowledge, the Calvert School, and Success for All, place an emphasis on curriculum, instruction, and learning processes that go beyond the typical teacher-led, basic-skills approach of many classrooms serving minority and poor students. The focus of the School Development Program is on creating an organizational culture that is very supportive of the social and psychological characteristics that promote resilience. Finally, although Title I schoolwide programs do not necessarily have a consistent or replicable design, they all emphasize a whole-school-improvement approach in contrast to traditional Title I programs, which target services to the lowest achievers. Below we briefly discuss each reform, and its potential for promoting high achievement among minority students.

The Comer School Development Model evolved out of the work of the Yale University Child Study Center under the leadership of psychiatrist James Comer. While the Comer model was designed to be implemented in grades kindergarten through twelve, most sites that have adopted the model have been elementary and middle schools. The program is based on a strong

commitment to expanding the role of schools in dealing with the developmental needs of children, particularly disadvantaged children in urban areas. Over the long term, the program aims to improve the academic achievement of students. However, the program assumes that this goal can be met most effectively by promoting community involvement and addressing the affective and social needs of children. A Governance and Management Team comprised of representatives of all adults involved in the school establishes and carries out various policy guidelines. A Mental Health Team provides input to the Governance and Management Team integrating mental health principles with the functioning of all school activities. The effectiveness of the Comer model has been demonstrated by improvements in school climate, and in students' behavior, achievement, attendance, and self-concept (Haynes & Emmons, 1997).

Success for All (SFA), developed at Johns Hopkins University by a team of researchers including Nancy Madden, Bob Slavin, and Nancy Karweit, is a structured and intensive early intervention program designed to prevent students from falling academically behind. Its goal is grade-level or near grade-level performance for all students in reading and other skill areas by the end of third grade and higher performance thereafter. Like Comer, Success for All focuses on the whole child to improve learning through the Family Support Team. Other components of SFA include reading tutors, a reading program, eight-week reading assessments, a program facilitator, and an advisory committee. Underlying SFA is an approach that "uses everything we know about effective instruction...to recognize and intervene with any deficits that do appear" (Madden, Slavin, Karweit, Dolan & Wasik, 1991, p. 594) Cooperative learning strategies are used to support and continue students' whole language experiences alongside a more structured reading and writing program. Based on a number of evaluations, SFA students have been found to show higher reading performance than matched control students at non-SFA schools (Slavin et

al., 1996). Also, significantly, a study by Ross, Smith, & Casey (1997) indicated that SFA had stronger effects for minority than for nonminority students.

The Paideia Program, developed by Mortimer Adler, was designed for students in grades K-12. The program has been implemented in elementary, middle, and high schools. This schoolwide program seeks to develop all aspects of the student's cognitions. A fully implemented Paideia program includes as its goals: (1) "acquisition of knowledge" through didactic teaching; (2) "development of intellectual skills" through teacher coaching and peer tutoring; and (3) "enlarged understanding of ideas and values" through Socratic seminars (Adler, 1984). Socratic seminars are the cornerstone of the Paideia concept. They consist of discussions among students and teachers based primarily on divergent questions so that a true exploration of ideas can occur. Such activities foster the development of advanced skills, such as critical thinking, and interpersonal and communication skills.

Core Knowledge, developed by E.D. Hirsch, is a sequential curriculum with a planned progression of specific knowledge. Its progressive, spiraling nature allows students to build on their knowledge base from one year to the next. The Core Knowledge curriculum is intended to comprise 50% of a school's curriculum. Its focus is to provide all students, advantaged and disadvantaged, equal access to knowledge. Central to Core Knowledge is its emphasis on multiculturalism. Alongside Aesop's Fables, students are taught Indian and African folk tales. At the Washington Core Knowledge School in Colorado, events like African American history month receive scant attention because the contributions of African Americans and other minorities are essential parts of the ongoing curriculum (Ruenzel, 1997). There is diverse evidence that Core Knowledge has been effective in raising school achievement levels. For example, at Hawthorne Elementary in San Antonio children entered school below grade level,

often at the 20th or 30th percentiles. However, by the time they finished fifth grade, students had caught up, or were achieving above grade level (American Educator, 1997). After implementing Core Knowledge at Hawthorne, school achievement was far better than would be predicted by the percentage of economically disadvantaged and LEP students (American Educator, 1997). Assessing three-year reading achievement gains, Stringfield and McHugh (1998) reported that Core Knowledge significantly raised students' longitudinal achievements in four out of five elementary school comparisons. However, this evaluation revealed less stellar results for math achievement.

The Calvert School is a curricular reform that focuses on the entire school, not solely low achievers. The curriculum has its roots in the Calvert School, a highly affluent private school in Maryland. The Calvert School also offers a highly structured, certified, home school curriculum. Over the years, Calvert School has developed a highly structured curricular and instructional program that places a strong emphasis on student-generated work. The curriculum overlaps to some degree but is independent from the Core Knowledge curriculum (Stringfield, 1995). An intensive writing program is a part of the Calvert School curriculum as well as the expectation that all students' work will be revised until there are zero errors. The effectiveness of the Calvert School curriculum has been evaluated in two Baltimore schools, Woodson Elementary and Barclay Elementary (Stringfield & McHugh, 1998). After implementing the Calvert School curriculum in both schools, student achievement improved dramatically as students' performances routinely moved from the bottom two quartiles to the top two quartiles. After three years, the first Woodson-Calvert group to complete third grade was performing at a level that averaged 25 percentiles higher in reading, 21 percentiles higher in math, and 21 percentiles higher in writing mechanics compared to their pre-Calvert peers (Stringfield & McHugh, 1998).

These findings are very similar to those found in the Barclay project. Consistently the pre-Calvert cohorts achieved below the 50th percentile on achievement tests for reading, writing mechanics, and math. By contrast, the Calvert cohorts scored at or well above national norms over a four-year span (Stringfield, 1995).

Title I schoolwide projects allow schools or districts to use their federal Title I dollars more flexibly to improve all students' achievements. To be eligible for schoolwide project status, 50% or more of the school population must be impoverished (typically defined by local school districts as those eligible for free or reduced-price lunches). In exchange for the unusual level of decision-making freedom, schoolwide projects face a somewhat greater level of program-accountability requirements. Many schools receiving schoolwide project funds elect to hire additional classrooms teachers to reduce class sizes. Others elect to use their funds for staff development and materials. Other schools develop extended day or extended year programs. Finally, growing numbers of schools are using their funds to implement proven programs, such as the School Development Program or Success For All. Schoolwide project funding allows schools a more efficient and integrated use of resources for the whole school. There are few studies that have addressed the ability of schoolwide projects to raise student achievement. Stringfield et al. (1997) studied the effectiveness of two urban and two rural/suburban schoolwide projects and two extended-year schoolwide programs. They found that while all of the schools and their students were benefiting from the presence of Title I support, there was little evidence of gains in student achievement. The authors concluded that "schoolwide projects produce academic gains only when accompanied by active, long-term, steady, focused, academic support" (p.14-33).

As this brief review suggests, the potential obstacles and supports for minority students' academic engagement and achievement are diverse. At the individual level, students' resilience appears to be an important predictor of school success. However, engagement in school work and high achievement are not solely determined by individuals. Cultural and social factors, the support of families and peers, and the climates, qualities, and resources of classrooms and schools all may influence these individual outcomes. As Montgomery & Rossi (1994) point out though, this does not suggest that schools, homes, and communities must all function optimally in order to promote academic success. Resources in one system may mediate risk factors in another. Montgomery & Rossi suggested, for example, that an intellectually stimulating home may compensate for inadequate schooling, and a supportive, orderly school may attenuate the effects of a dangerous and chaotic neighborhood.

Although the research we have reviewed provides a foundation for understanding factors that may advance minority students' achievements, few studies have investigated the individual, classroom, and school characteristics of minority high-achievers, and little recent research has documented longitudinal trends in minority students' learning. These limitations are even greater when one considers the paucity of information concerning elementary-aged children. Furthermore, while the reform models we discussed appear to hold promise for raising the academic achievements of students placed at risk, little is known about how well these programs enrich and enhance the academic performance of high-achieving students or underachieving, academically able students. In addition, there is little direct evidence concerning how effective these reforms are in advancing the achievements of students from various racial/ethnic groups.

The research documented below attempts to respond to these gaps in the literature. Using an existing national data set, *Prospects*, we explore the individual, classroom, and school

characteristics that typify the experiences of minority and White students, and those that typify the experiences of high-achieving minority and White students. Also, using *Prospects* we study three- and four-year trends in students' academic achievement and engagement. Finally, we employ the data set from *Special Strategies* to investigate the potential of various whole-school reform models to advance African American students' longitudinal learning rates.

Section 2. Method

The series of analyses outlined here respond to several issues raised by this review of the literature concerning minority students' academic achievements. First, we present yearly national data indicating the extent to which minority students in the first through sixth grades were represented among high-achievers scoring above the 50th, 75th, and 95th national percentiles during 1991, 1992, 1993, and 1994. Second, using longitudinal data from *Prospects*, we track the longitudinal trends for the math and reading achievement scores, and academic engagement levels, of the nation's minority and White elementary school children, and we present these same outcomes for two relatively high-achieving subsamples of minority and White students (i.e., those students who began the first grade at or above the 50th and 75th national percentiles, and those who started third grade at or above the 50th and 75th national percentiles). Third, based on data from *Prospects* and from the *Special Strategies* study, we compare national longitudinal achievement outcomes for African American students who attended high-poverty schools (i.e., 75% poverty or greater) to the outcomes for African American students who attended a select group of high-poverty schools with exemplary whole-school restructuring programs. Fourth, we report the typical characteristics of schools and classrooms attended by the nation's minority and White students, and by high-achieving minority and White students. Finally, we compare the individual and school characteristics of high- and low-achieving minority students in an attempt to understand factors that may be associated with minority students' academic success.

It would have been desirable to gain greater insight into the academic outcomes and school, classroom, family, and individual attributes of other racial/ethnic populations; however, data limitations precluded several analyses. First, the outcomes for *Special Strategies* students

attending whole-school reform programs were restricted to African American and White students. Second, analyses of high-achieving minority students based on the national *Prospects* data were restricted to African Americans, Latinos, and Whites. In both cases, the sample sizes for other non-Asian minority groups, such as Native Americans, were too small to generate reliable and meaningful results. Finally, although it may have been interesting to study outcomes for subpopulations, such as Puerto Rican and Mexican American students, no data was available to identify such subgroups.

Data Sources

Most analyses were based on data from the nationally representative *Prospects* study. The *Prospects* sample was selected using a three-stage, stratified design, with districts as the first-stage unit, schools within districts as the second-stage unit, and, where necessary for design efficiency, students within designated grades within schools as the third-stage unit. The data set contains standardized reading and math achievement scores for a sample of as many as 40,000 students in three grade cohorts (first, third, and seventh) over a four-year period beginning during the 1990-1991 academic year (the baseline year for the first-grade cohort was the fall of the 1991-1992 school year). Students from the third-grade cohort completed questionnaires during each year of the study, but first-grade cohort students completed a questionnaire only during the final year. Detailed questionnaires were administered to the students' parents, teachers, and principals, and the *Prospects* data collection staff abstracted additional student-level information from school records, during the spring of each year of the study.

The first wave of data collection for the first-grade cohort students during the fall of the 1991-1992 school year was restricted to administering the Comprehensive Test of Basic Skills

Fourth Edition (CTBS/4) standardized achievement tests. Subsequent to the fall of 1991-1992, during the springs of 1991-1992, 1992-1993, and 1993-1994, the *Prospects* data collection staff collected the full complement of achievement and questionnaire data for first-grade cohort students. The full complement of achievement and questionnaire data was collected for the third-grade cohort students during the springs of each of the four school years from 1990-1991 to 1993-1994. Due to these differences, both grade cohorts had four waves of achievement data, but first-grade cohort students had other data for only three of the four waves of data collection.

We focused on the first- and third-grade cohorts, and developed separate cohort- and subject-specific samples for analysis. Specifically, we formed four samples, which are summarized in Table 1: (1) first-grade cohort reading; (2) first-grade cohort math; (3) third-grade cohort reading; and (4) third-grade cohort math. Depending on the nature of the analysis, we employed both cross-sectional and four-year, longitudinal versions of each of these four samples. Tables 2 and 3 provide descriptive data for the cross-sectional and longitudinal samples. As these data reveal, despite attrition from the longitudinal samples, the general characteristics of students and schools from the longitudinal and baseline cross-sectional samples remained similar. The largest differences were found for the location of the schools attended by third-grade cohort reading and math students. Students in the longitudinal samples were more likely than students from the cross-sectional sample to attend a rural school, and they were less likely to attend an urban or suburban school. However, average school poverty levels for the longitudinal samples actually were slightly higher.

In addition, we used data for first-grade and third-grade cohort students from the companion study to *Prospects*, *Special Strategies*. Stringfield, Millsap, Herman, et al. (1997) reported that the *Special Strategies* study was designed to document and assess 10 promising

Table 1. Summary of *Prospects* Longitudinal Samples

First-Grade Cohort

	Number of Students				
	Total	White	African American	Latino	Native American
Reading Sample					
All Students	7,173	4,215	1,601	893	93
At or Above 50th Percentile in Reading	2,822	2,018	372	223	
At or Above 75th Percentile in Reading	1,171	909	108	74	
Math Sample					
All Students	7,099	4,136	1,605	884	93
At or Above 50th Percentile in Math	3,194	2,292	406	257	
At or Above 75th Percentile in Math	1,473	1,112	128	104	
Engagement Sample					
All Students	7,327	4,278	1,638	923	96
At or Above 50th Percentile in Math or Reading	3,962	2,773	565	333	
At or Above 75th Percentile in Math or Reading	1,936	1,463	186	135	

Third-Grade Cohort

	Number of Students				
	Total	White	African American	Latino	Native American
Reading Sample					
All Students	7,520	4,163	1,491	1,365	81
At or Above 50th Percentile in Reading	3,272	2,409	288	323	
At or Above 75th Percentile in Reading	1,527	1,236	86	101	
Math Sample					
All Students	7,388	4,062	1,489	1,350	77
At or Above 50th Percentile in Math	3,207	2,202	328	370	
At or above 75th Percentile in Math	1,640	1,194	125	141	
Engagement Sample					
All Students	7,640	4,209	1,526	1,401	82
At or Above 50th Percentile in Math or Reading	4,396	3,003	494	565	
At or Above 75th Percentile in Math or Reading	2,284	1,711	184	199	

Table 2. Comparison of Longitudinal Samples to 1991 Cross-sectional Samples, First-Grade Cohort

	Math		Reading	
	Cross-sectional Sample/1991	**Longitudinal Sample**	**Cross-sectional Sample/1991**	**Longitudinal Sample**
Student Characteristics				
CTBS Test Score [Mean (SD)]	479.39 (69)	484.69 (67)	479.17 (58)	483.18 (58)
SES [Mean (SD)]	.15 (.79)	.17 (.80)	.16 (.80)	.19 (.80)
Race (%)				
Caucasian	69	71	70	71
African American	15	14	15	14
Latino	10	10	10	10
Native American	2	2	2	2
Asian	3	3	3	3
Other	.5	.4	.4	.4
Gender (%)				
Female	49	48	49	48
Male	51	52	51	52
Region of Residence (%)				
Northeast	20	21	19	21
Midwest	18	19	18	19
West	23	21	24	22
South	40	39	39	39
School Characteristics				
Location (%)				
Urban	24	22	24	21
Rural	39	43	38	42
Suburban	37	35	38	36
Percent Poverty [Mean (SD)]	42.13 (25)	41.39 (25)	41.85 (25)	41.07 (25)
Unweighted N	**10,613**	**7,114**	**10,710**	**7,188**
Weighted N	**3,214,119**	**2,299,129**	**3,237,987**	**2,327,515**

Table 3. Comparison of Longitudinal Samples to 1991 Cross-sectional Samples, Third-Grade Cohort

	Math		Reading	
	Cross-sectional Sample/1991	Longitudinal Sample	Cross-sectional Sample/1991	Longitudinal Sample
Student Characteristics				
CTBS Test Score [Mean (SD)]	677.93 (46)	680.38 (45)	680.05 (49)	682.24 (47)
SES [Mean (SD)]	.18 (.79)	.21 (.77)	.19 (.79)	.23 (.78)
Race (%)				
Caucasian	71	73	71	73
African American	12	12	12	11
Latino	9	9	9	9
Native American	2	2	2	2
Asian	3	3	3	4
Other	1	1	1	1
Gender (%)				
Female	50	50	51	50
Male	50	50	49	50
Region of Residence (%)				
Northeast	18	23	18	22
Midwest	24	22	23	21
West	20	19	21	22
South	38	36	37	35
School Characteristics				
Location (%)				
Urban	26	24	26	23
Rural	30	41	30	40
Suburban	43	35	44	37
Percent Poverty [Mean (SD)]	36.16 (25)	38.20 (24)	35.95 (25)	37.47 (24)
Unweighted N	**14,069**	**7,394**	**14,268**	**7,525**
Weighted N	**2,731,481**	**1,450,306**	**2,777,293**	**1,495,844**

alternative strategies for educating students placed at risk. The researchers gathered qualitative and quantitative data at six urban schools, and at six suburban or rural schools. The 10 programs that the researchers studied were identified as exemplars of each program design. Because the focus of our analyses was on minority students in general, and high-achieving minority students in particular, we excluded from our analyses those special strategies targeted to subpopulations of low-achievers. The programs selected for analysis were those employing a whole-school restructuring process, which included:

- Comer's School Development Program (SDP);
- Success For All (SFA);
- Paideia;
- Chapter 1 schoolwide projects; and
- Chapter 1 extended-year programs.

Similarities in the timing and testing of students taking part in *Special Strategies* and the nationally representative *Prospects* study permitted comparisons between *Special Strategies* outcomes and those achieved across the nation as a whole.

Analytical Methods

This research relied primarily on a combination of descriptive statistics and multivariate, hierarchical modeling techniques. Preliminary analyses of students' longitudinal achievement and engagement outcomes are presented in simple figures. These figures display the achievement and engagement gaps between minority and White students, and map changes in these gaps over a four-year period. Using the two- and three-level Hierarchical Linear Model (HLM) software programs developed by Bryk, Raudenbush, & Congdon (1994), the

achievement and engagement data were employed in two-level multilevel models, which tested the statistical significance of differences among students' baseline and longitudinal achievement outcomes. Three-level hierarchical analyses examined the extent to which the *Special Strategies* whole-school reform designs mediated the longitudinal achievements of African American students. The two-level analyses focused on the longitudinal achievement and engagement outcomes for high-achieving African American, Latino, and White students, and the three-level models included analyses for the overall sample of African American students and for a high-achieving subsample of African American students.

We defined high-achievement based on two standards: those students who were performing at or above the 50th and the 75th national percentiles on the baseline *Prospects* tests. Reading and math students were selected separately based on subject-specific definitions of high-achievement. For our analyses of student engagement levels over time, we defined high-achievers as those students who scored above the 50th and 75th national percentiles on the math and/or reading tests. Because the data we used in creating the student engagement measure were not collected for first-grade cohort students until the spring of 1991-1992, we defined the high-achieving first-grade cohort students for the longitudinal student engagement analyses based on achievement data from the spring of 1991-1992.

Some researchers assert that classical test theory implies that groups with extreme values always regress to the mean on subsequent measurement occasions. Because most of our analyses involve groups with extreme achievement scores, we used specific procedures to attempt to address this problem. Our hierarchical analyses omitted the growth period from the baseline selection test to the second test administered to students, which, according to analyses performed by Tallmadge (1988), should eliminate between 80% and 90% of the regression from

the selection test to the final posttest. Other researchers, such as Linn (1982) have indicated that using separate selection tests and pretests eliminates regression from the selection test to the pretest, and also eliminates most of the regression from the selection test to the posttest, but to the extent that the selection-posttest correlation is lower than the selection-pretest correlation, there will be additional regression from pre- to posttest.

Exploratory analyses revealed selection-pretest correlations that were slightly higher than selection-posttest correlations. However, correlations by race/ethnicity (i.e., White, African American, and Latino) yielded similar results for each group. Therefore, any additional regression appeared to influence the posttest scores of each racial/ethnic group in similar ways. Rather than employing additional adjustments for potential regression artifacts, which would require making further statistical assumptions based on a classical test theory model or some other correction model, our analyses modeled high-achievers' multiwave longitudinal growth from the second testing point in spring 1992 to the final posttest in spring 1994.

With regard to our analyses of longitudinal student engagement, we did not omit the growth period from baseline selection to the second measurement occasion. As Campbell & Stanley (1963) and Samsa (1992) have noted, although extreme groups regress to the mean in pretest-posttest designs in which a single attribute is measured, it is not necessarily true that groups selected on the basis of extreme scores on one attribute will regress to the mean on another positively correlated attribute. In this case, regression to the mean of group means requires a positive correlation between the outcome's (student engagement) measurement error and the measurement error of the attribute used in the selection (baseline test scores). Although we conducted no formal tests of this relationship, it was our assumption that the measurement error of teacher's reports of students' engagement in classroom activities was relatively

independent of the measurement error of the standardized tests administered by the *Prospects* data collection staff.

Finally, analyses of the individual, classroom, and school characteristics for White and minority students, and for high and low achievers primarily relied on descriptive statistics. Comparisons of these characteristics across racial/ethnic groups and between the high- and low-achieving groups were based on standardized differences, or effect-size estimates.

Measures

The single-item and composite measures we created correspond to the following three general levels: student-level, classroom-level, and school-level. These items came from the *Prospects* Student, Parent, Classroom Teacher, Principal, Student Record Abstract, Student Profile, and Characteristics of Schools and Programs instruments. In addition, some general student background data came from the *Prospects* Survey Control data file, and student achievement scores were obtained from yearly CTBS/4 data files. Single-item variables were created based on responses to one item from a single instrument, and composite measures were developed based on multiple items from one or more instruments. We created the composite measures using a uniform procedure that involved five steps.

First, a set of items was selected to represent a theoretical construct, such as student engagement, and the items were recoded so that they were amenable to statistical analysis. For instance, negatively phrased items were reverse coded, ambiguous multiple responses were coded as missing, and each item's lowest possible scale value was set at zero. Second, principal components analysis with varimax rotation was utilized to confirm that the factor structures were valid. For some items in particular years, factor loadings were below .30, but these items were

retained because in other years the loadings were above .30. Also, this practice allowed us to maintain the same factor definition across years. Third, all items were converted to z-scores. Fourth, a mean z-score for each set of items was computed for each student for each of the years. If an item response was missing, the item was not used to compute the mean z-score for that case. Fifth, an overall longitudinal factor measure, which was the mean of the four possible yearly z-scores (three for the first grade cohort), was computed. If a yearly mean z-score was missing, the average of the other yearly values was used as the overall measure. If three yearly measures were missing (two for the first grade cohort), the single yearly value was used as the overall measure. The following three sections provide detailed descriptions of the single-item and composite-item variables that we developed to measure student-, classroom-, and school-level attributes.

Section 2.1. Development of Student Characteristic Measures

A number of student characteristic single-item and composite variables were developed using items from the Student and Parent Questionnaires, and from the Student Profile and Student Record Abstract instruments. In addition, many basic background characteristics, such as race/ethnicity, gender, and grade level, were based directly on variables contained in the *Prospects* Survey Control File.

From the Student Questionnaire, items were culled to represent one of several student affective factors. These factors were developed for students from the third grade cohort for each year of the study. It was not possible to develop the affective variables for students from the first grade cohort because they were not administered a questionnaire. Select items from the Parent Questionnaire were used to develop SES measures, and other Parent Questionnaire items formed a factor representing the parent's educational expectations for his/her child. A student engagement factor was constructed based on items from the Student Profile instrument, which was completed by each student's teacher. These composites from the Parent Questionnaire and Student Profile instrument were developed for both the third-grade and first-grade cohort students. Below, Table 4 references the student attributes and the questionnaire items and data elements from which they were derived.

Composite Variable Descriptions

Based on the variables referenced in Table 4, and using the methods described previously, the following student composite variables were developed from the *Prospects* survey instruments:

Socioeconomic Status. The Parent Questionnaire items selected to represent the SES

Table 4. Student Background Attributes: Factors/Variables Derived from *Prospects* Survey Instruments / Data File

Student-Level Factors/ Variables	Survey Instruments / Data File					
	Student (Cohort 3)	Student Profile	Student Record Abstract		Parent	Survey Control File
			Cohort 1	Cohort 3		
	Items/Data Elements from which Factors/Variables were Derived					
Gender						GENDER
Race/Ethnicity						RACE
Mobility (Number of schools attended)						Y2/Y3/Y4 MOVEST
Socioeconomic Status					76C, 80C, 82C, 96C, 100C, 103	
Math Self-efficacy	21; 22A-B,D					
Reading Self-efficacy	10; 11A-B,D					
Self-concept	82A,D,F-H,J; 83A-D					
Locus of Control	82B,C,E,I					
Attitude Toward School	11C; 22C; 43; 44A-C					
Grade Point Average			24A,C	25		
Repeated a Grade			19	20A		
Gifted/Talented Participant			23J	24J		
Parent Educational Expectations					49, 61-63	
Student Engagement		3; 9B-C; 10A-C,E-F; 11A,C				

factor were similar to those used for the 1988 National Education Longitudinal Study (NELS). These items included the respondents' educational level and occupational prestige. If available, the educational level and occupational prestige of the respondent's spouse were included. The values imputed for the occupational prestige ratings were those developed by the National Opinion Research Center (NORC) for the 1989 General Social Survey (GSS). The GSS Prestige scale used the 1980 Census Occupation Classification System, which matched the classification scheme that was used in the occupation items 80C and 82C that appeared in the *Prospects* Parent Questionnaire. Also, the SES composite included a categorical variable indicating family income bracket. Responses to these items were standardized and the average z-score for each student was included in the SES composite.

Self-concept. This measure, based on 10 items from the Student Questionnaire, represented the degree to which the student agreed or disagreed that s/he is a good person, who is of value.

Locus of Control. The locus of control measure was based on four Student Questionnaire items that asked how strongly students agreed or disagreed that they had control over circumstances in their lives, and if these circumstances were less often affected by chance and luck.

Math Self-efficacy. Based on four Student Questionnaire items, this composite measured how strongly students agreed or disagreed that they were a good math student, who had few problems with the subject.

Reading Self-efficacy. Based on four Student Questionnaire items, this composite measured how strongly students agreed or disagreed that they were a good reading student, who had few problems with the subject.

Student Engagement. In the Student Profile instrument, teachers were asked how strongly they agreed or disagreed-that a student expressed attitudes and exhibited behaviors indicating an interest in school work and a desire to learn. This measure was developed based on teachers' responses to 10 items.

Attitude Toward School. Responses to six Student Questionnaire items were used to form this composite variable that measured how positively students felt toward school.

Parent Educational Expectations. Responses to four Parent Questionnaire items were used to assess the expectations parents had about how well their children would do in school in the future and how far in school they would go.

Single-Item Variable Descriptions

Categorical and continuous variables that were developed for the students were based on single items from one particular data file. Yearly variables were produced for most of the categorical and continuous variables. In other cases, basic dummy codes were developed to represent static student characteristics. Most of the static student characteristics, such as gender and race/ethnicity, were based on recoded values of a single *Prospects* Survey Control File variable.

Gender. Based on the Survey Control File GENDER variable, females were coded "0" and males were coded "1."

Race/ethnicity. For certain analyses, dummy codes, which were based on the Survey Control File RACE variable, were created for: White, African American and Latino. For other analyses, the complete RACE variable was used.

Mobility. Based on three yearly indicators of a student's move to a new school, Y2MOVEST, Y3MOVEST, and Y4MOVEST, a continuous variable was developed as an indicator of student mobility. The three yearly indicators were summed to form a variable indicating how many times the student had changed schools over the course of the study.

Grade Point Average. A categorical item from the Student Record Abstract instrument asked teachers to circle one response option that "best describes this student's school grades or report card grades this year." The responses were recoded into a continuous variable reflecting the student's overall grade point average as follows: "mostly A's" was coded as "4," "half A's/half B's" was coded as "3.5," "mostly B's" was coded as "3," "half B's/half C's" was coded as "2.5," "mostly C's" was coded as "2," "half C's/half D's" was coded as "1.5," "mostly D's" was coded as "1." For the first-grade cohort students, for whom teachers did not complete the Student Record Abstract for the first wave of data, we used data from the 1992 Student Record Abstract. The 1992 version reported students' grades by two variables, math GPA and reading GPA.

Repeated Grade. This indicator was based on an item from the Student Record Abstract which asked "has this student ever repeated a grade or been held back?" As described above, the 1992 version was used for the first-grade cohort, and the 1991 version was used for the third-grade cohort. Responses for the first-grade cohort students were recoded into a dummy variable as follows: "has not repeated a grade" was coded as "0" and the remaining responses "repeated kindergarten," "pre-first transitional program," "in a pre-first program," "in a transitional first program," and "repeated first grade" were coded as "1." Responses for third-grade cohort students were based on a simple dichotomy: "has not repeated a grade" was coded as "0," and those who had repeated a grade during their school careers were coded as "1."

Gifted and Talented. One item from the Student Record Abstract asked teachers to state whether the student was currently enrolled in a gifted and talented program. Students enrolled in gifted and talented programs were coded as "1," and students who were not enrolled in a gifted and talented program, or who attended a school that did not offer a gifted and talented program were coded as "0."

Section 2.2. Development of Classroom-level Variables

Items and factors derived from the Classroom Teacher Questionnaire were used to describe the characteristics of classrooms. In many cases, math teachers and reading/English/language arts (R/E/LA) teachers responded to subject-specific items concerning their classrooms and instruction. Other Classroom Teacher Questionnaire items were more general, such as the teacher's years of experience, or his/her highest degree earned. An item from the Student Record Abstract was used to determine the availability of gifted and talented programs. Finally, both Teacher Questionnaire items and CTBS test data were used to measure the representation of high-achieving students within each classroom. See Table 5 for a list of items used and the surveys from which they came.

Composite Variable Descriptions

High-Achieving Classmates. This classroom-level composite was based on 1991 and 1992 teacher reports of the level of classroom instruction and on the average baseline CTBS/4 achievement level of the students within the classroom. The proportion of students in the classroom receiving instruction that was above their grade level, and the average achievement level of the classroom were combined to measure the representation of high-achieving classmates.

Student-Centered, Advanced-Skills Oriented Approach. Separate math and R/E/LA measures were based on a number of items from the Teacher Questionnaire concerning the degree to which typical instructional practices emphasized advanced skills and a student-centered instructional approach. High-scoring math teachers reported frequent use of hands-on materials (e.g., manipulatives, calculators, and life skills materials), placed an emphasis on

Table 5. Classroom-level Attributes: Factors/Variables Derived from *Prospects* Survey Instruments / Data File

Classroom-level Factors/Variables	Survey Instruments / Data File					
	CTBS		Student Record Abstract		Classroom Teacher	
	Cohort 1	Cohort 3	Cohort 1	Cohort 3	Cohort 1 (1992)	Cohort 3 (1991)
	Items/Data Elements from which Factors/Variables were Derived					
Gifted/Talented Program Available			23J	24J		
Teacher Uses Computer to Challenge Brightest Students					A-13I	A-10I
Student-Centered, Advanced Skills Approach (R/E/LA)					C-1C,G,H; L-20D-F; L-21D,F; L-22A-G,U-W,Y-Z; L-22AA-FF; L-23B-D, H-I, N-P; L-24E; F-8H-K,O,Q	(1992) C-1C,G,H; L-20D-F; L-21D,F; L-22A-G,U-W,Y-Z; L-22AA-FF; L-23B-D, H-I, N-P; L-24E; F-8H-K,O,Q
Student-Centered, Advanced Skills Approach (Math)					C1C,F-G,H,M; I19E-F,I,J; I20B,D-G,I,L-S; I21B-C,H-I,E	(1992) C-1C,F,G,H,M; I-19E-F,I,J; I-20B,D-G,I,L-S; I-21B-C,H-I,E
High-achieving Classmates (R/E/LA)	SSTR	SSTR			L-5A-E	R-4A-K
High-achieving Classmates (Math)	SSMCA	SSTM			I-4A-E	I-4A-K
Teacher Level of Education					F-8	F-9
Teacher Years Experience					F-3	F-3
Teacher Years at School					F-4	F-4
Teacher Race					F-2	F-2
Class size					A-2	A-7
Percent of Class Time Devoted to Academic Instruction					B-1A	B-2A

52

53

advanced topics (e.g., measurement, geometry, statistics) and on developing students' appreciation of the practical applications of math, and tended to permit frequent opportunities for students to work together. R/E/LA teachers who scored highly indicated frequent use of meaningful reading materials (e.g., children and adult newspapers and magazines, and a variety of literary materials), and emphasized comprehension skills (e.g., drawing inferences, and synthesizing information) and students' appreciation of reading and writing, and tended to provide frequent opportunities for students to work together and to apply reading and writing in practical, meaningful ways. Due to the omission of many questionnaire items from the 1993 and 1994 Teacher Questionnaires, the classroom teacher factors for these years were based on smaller numbers of items from two of the three categories mentioned above (i.e., the materials used, and the topics and skills taught).

Single-Item Variable Descriptions

Percent of Class Time Devoted to Academic Instruction. Teacher Questionnaire items asked math and R/E/LA teachers to indicate "(a)pproximately what percent of your classroom time in the course of a typical school day is spent in the following activities? Total should equal 100 percent." Teachers estimated the percent of classroom time devoted to: (A) academic instruction; (B) personal/social development of students; (C) noninstructional tasks, and; (D) other classroom activities. The teachers' reports of the percent of classroom time spent on (A) academic instruction were used to create a continuous variable representing the percent of classroom time devoted to academic instruction.

Class Size. Classroom teachers were asked: "What is the typical number of students in your classroom?" This item was used to create a continuous variable representing class size.

Teacher Highest Degree. Teachers' responses to "what is the highest academic degree you hold?" were recoded as follows: "Less than a Bachelor's degree," "Bachelor's," and "At least one year of course work beyond a Bachelor's, but not a graduate degree" were coded as "0." "Master's," "Education specialist or professional diploma based on at least one year of work past master's degree level," "Doctorate," and "First professional degree" were coded as "1."

Teacher Years of Experience. This continuous variable was based on teachers' responses to the question "counting this year, how many years in total have you taught at either the elementary or secondary level?"

Teacher Years Teaching at School. This continuous variable was based on the Classroom Teacher Questionnaire item asking "counting this year, how many years in total have you taught at this school?"

Teacher Race. Dummy variables were created to indicate the classroom teacher's race: Asian, African American, Caucasian, Latino, Native American, and Other.

Teacher Uses Computer to Challenge Brightest Students. This indicator was based on the Classroom Teacher Questionnaire item "towards which three of the following goals is your use of computers in that class most directed?" Teachers who chose "for challenging the brightest students" were coded as "1," and teachers who did not select this response option were coded as "0."

Gifted and Talented Program Available. One item from the Student Record Abstract was dummy coded to indicate whether a gifted and talented program was offered at the school. The item asked teachers to state whether the student was currently enrolled in a gifted and talented program. A response of "not available" was coded as "0" and a response of "enrolled" or "not enrolled" (indicating a program was available) was coded as "1."

Section 2.3. Development of School-Level Variables

A variety of school-level categorical and continuous variables were developed using items from the Classroom Teacher, Principal, and Characteristics of Schools and Programs survey instruments. These items defined various school-level attributes belonging to one of three general classes of variables: (1) Characteristics of Peers; (2) School Resources, and; (3) School Climate. In addition, one composite variable was created as an overall measure of the availability of school resources. The school attributes and the specific questionnaire items from which they were derived are referenced below in Table 6.

Composite Variable Description

Availability of Instructional Resources. Separate items from the Classroom Teacher Questionnaire asked about the availability of: (1) notebooks for students; (2) pens and pencils; (3) ditto masters; (4) photocopiers; and (5) basic supplies. The items were recoded so that "often not available" and "never available" were coded as "1", and "sometimes not adequate" and "adequate supply" were coded as "0." A final item, which asked teachers to assess the overall sufficiency of materials to meet students' needs, was coded in the same way.

Single-Item Variable Descriptions

Characteristics of Peers. Items from the Characteristics of Schools and Programs instrument were used to describe the percentage of students in the school who were: (1) White; (2) eligible for free lunch; (3) below the 50th percentile in reading and in math; and (4) below the 25th percentile in reading and in math.

Student Behavior Interferes with Teaching. This variable assessed the degree to

Table 6. School-level Attributes: Factors/Variables Derived from *Prospects* Survey Instruments

School-level Factors/ Variables	Survey Instruments			
	Principal	Characteristics of Schools and Programs	Classroom Teacher	
			Cohort 1	Cohort 3
	Items from which Factors/Variables were Derived			
Characteristics of Peers				
Percent White		10C		
Percent Free-lunch Eligible		11		
Percent <50%ile Reading		13A		
Percent <25%ile Reading		14A		
Percent <50%ile Math		13C		
Percent <25%ile Math		14C		
Availability of Resources				
Insufficient materials to meet student needs			C-5	C-5
Availability of Basic Supplies			C-3E	C-3E
Availability of Notebooks			C-3A	C-3A
Availability of Pens/pencils			C-3B	C-3B
Availability of Ditto master			C-3C	C-3C
Availability of Photocopier			C-3D	C-3D
Overall Availability of Resources			C-3A-E, C-5	C-3A-E, C-5
Climate				
Student Behavior Interferes with Teaching			E-1B	E-1D
Teachers Seek New Ideas			E-1K	E-1Q
Teachers Look Forward to Work Each Day			E-1N	E-1T
Parents Involved in School Programs	9E			

which teachers agreed that "the level of student misbehavior (e.g., noise, horseplay, or fighting in the halls, cafeteria, or student lounge) in this school interferes with my teaching." Responses indicating strong or moderate agreement were coded "1," and all other responses were coded "0."

Teachers Seek New Ideas. This variable was based on an item asking teachers to state the degree to which they agreed that "teachers in this school are continually learning and seeking new ideas." Responses indicating strong or moderate agreement were coded "1," and all other responses were coded "0."

Teachers Look Forward to Work Each Day. This variable was based on an item assessing the degree to which teachers agreed that they "usually look forward to each working day at this school." Those who strongly or moderately agreed were coded "1," and all other responses were coded "0".

Parents Involved in School Programs. An item from the School Principal Questionnaire asked principals to indicate the extent to which they agreed or disagreed that parents were actively involved in their schools' programs. The responses of "strongly agree" and "moderately agree" were coded as "1," and all other responses were coded "0."

Section 3. Results

The presentation of the results of our analyses is organized as discussed in the Method section. First, we present national data indicating the extent to which minority students in the first through sixth grades were represented among high-achievers scoring above the 50th, 75th, and 95th national percentiles. Second, using longitudinal data from *Prospects*, we track the longitudinal trends for the math and reading achievement scores, and academic engagement levels, of the nation's minority and White elementary school children, and we present these same outcomes for two relatively high-achieving subsamples of minority and White students (i.e., those students who began the first grade at or above the 50th and 75th national percentiles, and those who started third grade at or above the 50th and 75th national percentiles). Third, based on data from *Prospects* and from the *Special Strategies* study, we compare national longitudinal achievement outcomes for African American students who attended high-poverty schools (i.e., 75% poverty or greater) to the outcomes for African American students who attended a select group of high-poverty schools with exemplary whole-school restructuring programs. Fourth, we report the typical characteristics of schools and classrooms attended by the nation's minority and White students, and by high-achieving minority and White students. Finally, we compare the individual and school characteristics of high- and low-achieving minority students in an attempt to understand factors that may be associated with minority students' academic success.

The Representation of Minority Students Among High-Achievers

Our first analyses of the *Prospects* data produced national estimates of the representation of various racial/ethnic groups (i.e., White, Asian American, African American, Latino, Native

American, and other race/ethnicity) among high achievers (i.e., at or above the 50th, 75th, and 95th national percentiles). The results of these analyses are displayed by cohort and by subject in Tables 7 through 10. The same method was employed in creating each of the tables. Based on yearly cross-sectional samples weighted by the *Prospects* yearly design weights we calculated the weighted proportions of students of each racial/ethnic background, and the weighted proportions of students of each racial/ethnic group who were high achievers during each year of data collection. For the first-grade cohort, these years correspond to the fall of first grade, the spring of first grade, the spring of second grade, and the spring of third grade (i.e., fall 1991, spring 1992, spring 1993, and spring 1994). For the third-grade cohort, the years of data collection correspond to the springs of the third, fourth, fifth, and sixth grades (i.e., spring 1991, spring 1992, spring 1993, and spring 1994).

Table 7, which shows the results for math achievement, indicates that all non-Asian minority groups tend to be underrepresented among the nation's highest achievers. For instance, although African American students represented 15% of the total first-grade population during the fall of 1991, among students performing at or above the 95th national percentile, only 3% were African American. Although Latino and African American students were better represented among high-achievers by the end of the third grade in the spring of 1994, both groups remained underrepresented. In all cases, White students were overrepresented among the nation's high-achievers.

The data in Table 8 indicated trends for reading achievement that are even more discouraging. Specifically, although African American students represented only 5% of the nation's highest achievers (i.e., $\geq 95^{th}$ national percentile) as they began formal schooling in the first grade during 1991, by the end of the third grade in spring 1994 only 1% of the highest

Table 7. Proportions of High Achievers by Race/Ethnicity and Year, First-Grade Cohort, Math

Race/Ethnicity		Year: Fall 91	Spring 92	Spring 93	Spring 94
White		N = 1,967,802 (70%)			
	≥ 50%	81%	82%	81%	79%
	≥ 75%	85%	85%	80%	81%
	≥ 95%	86%	85%	83%	78%
Asian		N = 73,596 (3%)			
	≥ 50%	3%	3%	4%	4%
	≥ 75%	4%	4%	5%	5%
	≥ 95%	3%	5%	7%	7%
African American		N = 432,929 (15%)			
	≥ 50%	7%	7%	7%	8%
	≥ 75%	5%	4%	7%	7%
	≥ 95%	3%	3%	4%	6%
Latino		N = 271,960 (10%)			
	≥ 50%	7%	6%	7%	8%
	≥ 75%	5%	5%	6%	6%
	≥ 95%	5%	6%	5%	8%
Native American		N = 51,177 (2%)			
	≥ 50%	2%	1%	1%	1%
	≥ 75%	2%	1%	1%	1%
	≥ 95%	2%	1%	.6%	.3%
Other		N = 16,984 (1%)			
	≥ 50%	.5%	.5%	.5%	1%
	≥ 75%	.5%	.5%	.5%	.5%
	≥ 95%	1%	.2%	1%	1%

Table 8. Proportions of High Achievers by Race/Ethnicity and Year, First-Grade Cohort, Reading

Race/Ethnicity		Year: Fall 91	Spring 92	Spring 93	Spring 94
White		N = 2,007,287 (70%)			
	≥ 50%	82%	80%	82%	80%
	≥ ≥ ≥ 75%	82%	83%	87%	85%
	≥ 95%	79%	88%	86%	88%
Asian		N = 75,055 (3%)			
	≥ 50%	3%	4%	4%	4%
	≥ ≥ ≥ 75%	3%	4%	4%	4%
	≥ 95%	4%	3%	4%	5%
African American		N = 426,813 (15%)			
	≥ 50%	7%	7%	7%	7%
	≥ ≥ ≥ 75%	5%	5%	4%	4%
	≥ 95%	5%	3%	3%	1%
Latino		N = 274,577 (10%)			
	≥ 50%	6%	7%	6%	7%
	≥ ≥ ≥ 75%	7%	6%	4%	6%
	≥ 95%	8%	4%	7%	5%
Native American		N = 50,705 (2%)			
	≥ 50%	2%	1%	1%	1%
	≥ ≥ ≥ 75%	2%	1%	1%	1%
	≥ 95%	3%	1%	1%	.1%
Other		N = 17,060 (1%)			
	≥ 50%	.5%	1%	.5%	1%
	≥ ≥ ≥ 75%	.5%	1%	.5%	1%
	≥ 95%	1%	1%	.5%	.1%

achievers were African American. Even when one considers the percentages of African American and Latino students who achieve at levels equal to or above the 50th national percentile, Tables 7 and 8 reveal a strikingly similar and dismal picture. In both cases, although African American and Latino students represented, respectively, 15% and 10% of the nation's first-grade students, during any of the four data collection periods only 6% to 8% were among those students at or above the 50th percentile in math and reading.

Tables 9 and 10 present the results for the third-grade cohort. For both math and reading, White students were overrepresented among those who achieve at levels at or above the 50th, 75th, and 95th percentiles, and for math, Asian students were most clearly overrepresented among students at or above the 95th percentile. Similar to the trend found for the first-grade cohort, African American and Latino students were slightly more likely to be found among the highest math achievers than among the highest reading achievers. This result may be influenced by the observation made by various researchers, including Murnane (1975) and Borman & D'Agostino (1996), that schooling tends to have a greater influence on students' math relative to reading outcomes. In contrast, dissonance between the home and school caused by cultural and language differences may contribute to African American and Latino students' relatively poorer reading outcomes (Boykin, 1992; Gordon & Yowell, 1992).

Longitudinal Trends for Math, Reading, and Student Engagement Score Gaps

Preliminary analyses of the total weighted longitudinal samples from *Prospects* produced the graphs in Figures 1 through 6 labeled "Total Weighted Sample." The graphs appearing below those for the total sample display unweighted results for the selective subsamples of high-achieving students at or above the 50th and 75th percentiles on the baseline achievement tests.

Table 9. Proportions of High Achievers by Race/Ethnicity and Year, Third-Grade Cohort, Math

Race/Ethnicity		Year: Spring 91	Spring 92	Spring 93	Spring 94
White			N = 1,675,935 (71%)		
	≥ 50%	81%	81%	79%	77%
	≥ 75%	84%	83%	82%	81%
	≥ 95%	81%	78%	78%	79%
Asian			N = 95,047 (4%)		
	≥ 50%	4%	5%	5%	6%
	≥ 75%	5%	6%	6%	7%
	≥ 95%	9%	10%	9%	10%
African American			N = 313,884 (13%)		
	≥ 50%	6%	7%	8%	8%
	≥ 75%	5%	6%	6%	6%
	≥ 95%	6%	6%	7%	5%
Latino			N = 210,401 (9%)		
	≥ 50%	6%	6%	7%	7%
	≥ 75%	4%	5%	5%	5%
	≥ 95%	3%	3%	3%	5%
Native American			N = 43,457 (2%)		
	≥ 50%	1%	1%	1%	1%
	≥ 75%	2%	1%	.5%	.3%
	≥ 95%	1%	.3%	0%	.2%
Other			N = 17,909 (1%)		
	≥ 50%	1%	1%	1%	1%
	≥ 75%	1%	1%	1%	1%
	≥ 95%	.3%	2%	3%	1%

Table 10. Proportions of High Achievers by Race/Ethnicity and Year, Third-Grade Cohort, Reading

Race/Ethnicity		Year: Fall 91	Spring 92	Spring 93	Spring 94
White		N = 2,007,287 (70%)			
	≥ 50%	83%	83%	84%	82%
	≥ ≥ 75%	87%	87%	89%	86%
	≥ 95%	88%	88%	89%	91%
Asian		N = 75,055 (3%)			
	≥ 50%	3%	4%	4%	5%
	≥ ≥ 75%	3%	3%	3%	4%
	≥ 95%	3%	3%	4%	3%
African American		N = 426,813 (15%)			
	≥ 50%	6%	6%	5%	7%
	≥ ≥ 75%	4%	4%	3%	4%
	≥ 95%	4%	4%	5%	3%
Latino		N = 274,577 (10%)			
	≥ 50%	5%	5%	5%	5%
	≥ ≥ 75%	4%	3%	3%	3%
	≥ 95%	2%	3%	2%	2%
Native American		N = 50,705 (2%)			
	≥ 50%	1%	1%	1%	1%
	≥ ≥ 75%	1%	1%	1%	1%
	≥ 95%	1%	.5%	.1%	0%
Other		N = 17,060 (1%)			
	≥ 50%	1%	1%	1%	1%
	≥ ≥ 75%	1%	1%	1%	1%
	≥ 95%	1%	2%	.5%	1%

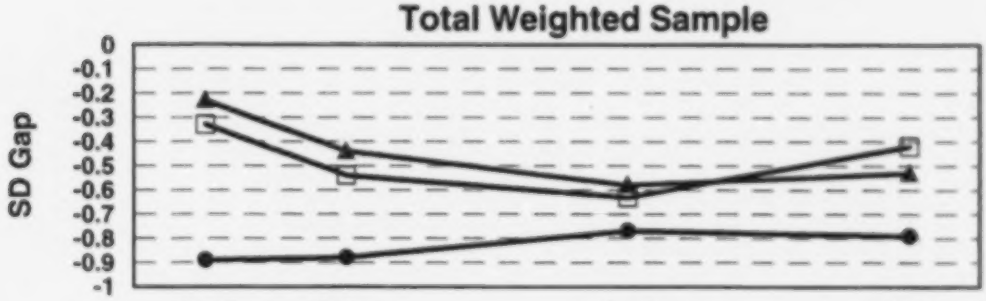
Unfortunately, small sample sizes precluded meaningful analyses of high-achieving Native-American students' longitudinal achievement and engagement trends. Each figure displays the four-year longitudinal trajectories of the standardized achievement gaps, or standardized engagement score gaps, between African American, Latino, and Native American students and their White counterparts.

Each of the four yearly gaps was computed by first subtracting the group mean score for White students from the group mean score of each minority group. The resulting raw score gap was divided by the standard deviation (*SD*) for the overall *Prospects* sample, which resulted in the standardized gaps reported in the figures. The use of the overall standard deviation as the denominator parallels methods outlined by Rosenthal (1994) for computing effect-size estimates, such as Cohen's *d* or Hedges' *g*, based on the average, or pooled, standard deviation. The standardized gaps between African American and White students, Latino and White students, and Native American and White students are labeled, respectively, "AA-W," "L-W," and "NA-W." These standardized gaps provide a uniform metric from which one may assess longitudinal changes in the minority-White test score and engagement-level differences.

First-Grade Cohort Results

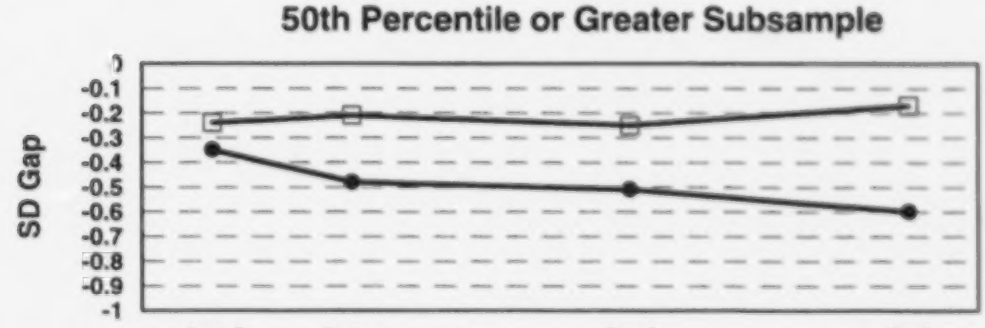
Beginning with the Total Weighted Sample in Figure 1, one can see that the math achievement gaps between African American and White students, and between Latino and White students remained relatively consistent in magnitude from first through third grade. African American students remained more than three-quarters of one *SD* behind White students, and the gap between Latino and White students was between one-third and two-thirds of one *SD*. The gap between Native American and White students increased from .23 *SD*s during the fall of first

Figure 1. Mean Standardized Math Score Gaps by Grade by Race, First-Grade Cohort



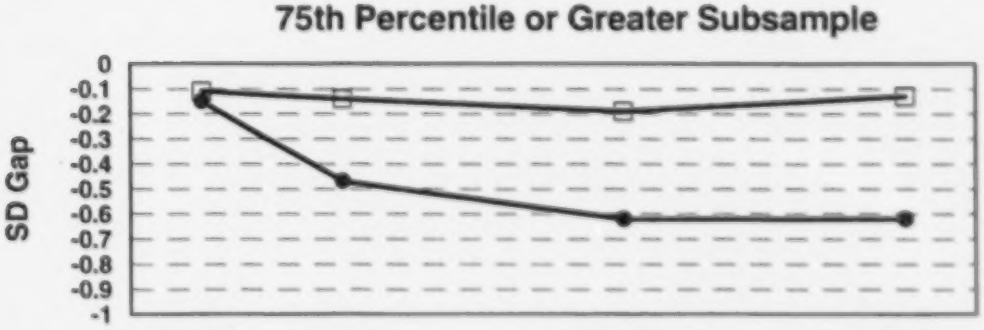
	1st,f	1st,s	2nd	3rd
AA-W	-0.89	-0.88	-0.77	-0.79
L-W	-0.33	-0.54	-0.63	-0.42
NA-W	-0.23	-0.44	-0.58	-0.53

Grade



	1st,f	1st,s	2nd	3rd
AA-W	-0.35	-0.48	-0.51	-0.6
L-W	-0.24	-0.21	-0.25	-0.17

Grade



	1st,f	1st,s	2nd	3rd
AA-W	-0.15	-0.47	-0.62	-0.62
L-W	-0.11	-0.14	-0.19	-0.13

Grade

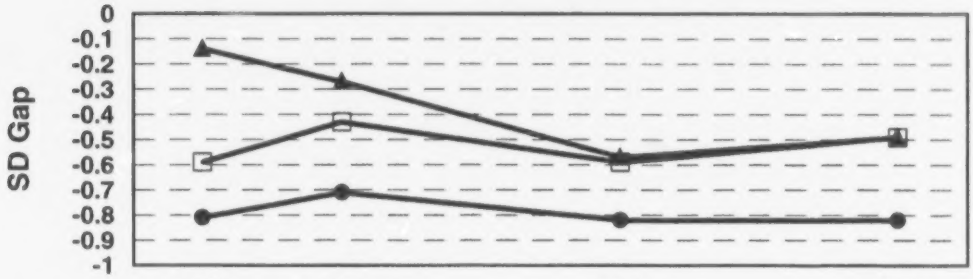
grade to over one-half of one *SD* by the end of third grade. Figure 2 shows similar trends for the reading achievement results. Namely, African American students remained .71 to .82 *SD*s behind White students, and Latino students began first grade with a gap of .59 *SD*s and ended third grade .49 *SD*s behind their White peers. Native American students began first grade .14 *SD*s behind White students, and by the end of third grade the gap widened to .49 *SD*s.

The longitudinal trends for high-achieving Latino students displayed in Figures 1 and 2 resemble those for the total Latino sample, in that the gaps are relatively constant from year to year. On the other hand. the gaps between high-achieving African American and White students expand. After selecting students whose baseline achievement scores were at or above the 75th percentile, obviously the baseline achievement differences between African American and White students were relatively small. In fact, the African American students from the 75th percentile or greater subsample in Figure 2 had baseline reading achievement scores that were slightly higher (.03 *SD*s) than those of their high-achieving White counterparts. However, by the end of the third grade, the African American students were .63 *SD*s behind the White students. It appears though, that a considerable portion of the longitudinal increase in the gap occurred between the first and second testing occasions, and some of this substantial increase may be due to regression effects.

The final outcome that we analyzed for first-grade cohort students was student engagement. The results for the Total Weighted Sample in Figure 3 indicate that the standardized engagement score gaps between African American and White students, and between Native American and White students remained relatively consistent in magnitude from first through third grade. However, as Latino students progressed from first to third grade their teachers reported consistently higher levels of engagement with classroom activities. A

Figure 2. Mean Standardized Reading Score Gaps by Grade by Race, First-Grade Cohort

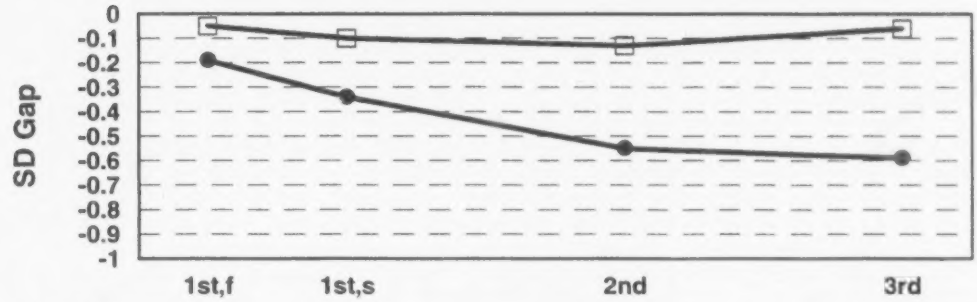
Total Weighted Sample



	1st,f	1st,s	2nd	3rd
AA-W	-0.81	-0.71	-0.82	-0.82
L-W	-0.59	-0.43	-0.59	-0.49
NA-W	-0.14	-0.27	-0.57	-0.49

Grade

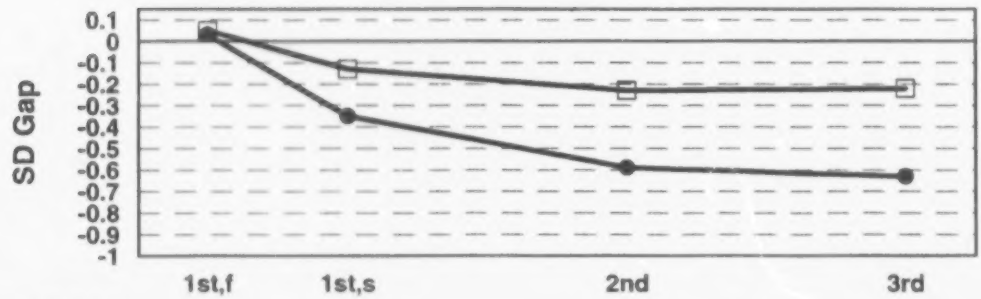
50th Percentile or Greater Subsample



	1st,f	1st,s	2nd	3rd
AA-W	-0.19	-0.34	-0.55	-0.59
L-W	-0.05	-0.1	-0.13	-0.06

Grade

75th Percentile or Greater Subsample



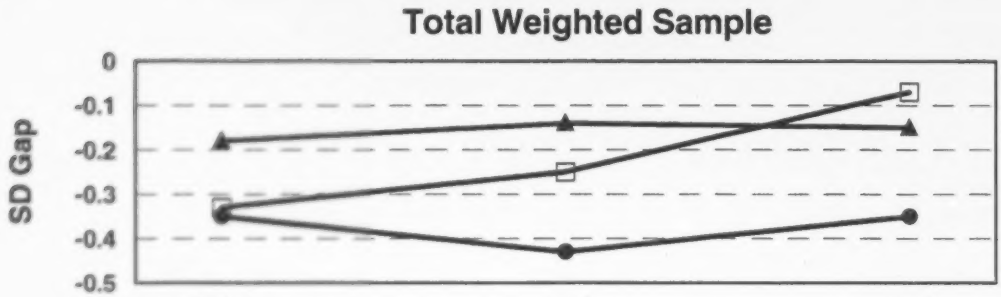
	1st,f	1st,s	2nd	3rd
AA-W	0.03	-0.35	-0.59	-0.63
L-W	0.05	-0.13	-0.23	-0.22

Grade

Table B18. SUMMARY OF THREE-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS FROM HIGH-POVERTY PROSPECTS SCHOOLS AND FOR AFRICAN AMERICAN STUDENTS FROM SPECIAL-STRATEGIES WHOLE-SCHOOL REFORM SCHOOLS, COHORT 3 $\geq 50^{th}$ %ILE

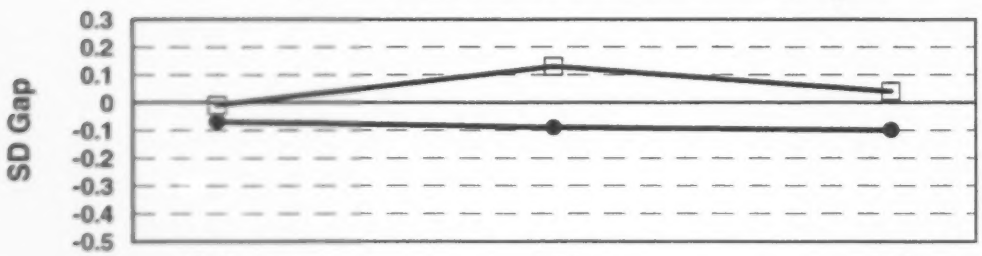
	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	701.54	1.25	559.09	***
Special Strategies school, γ_{001}	-5.00	3.93	-1.27	
Model for learning rates, π_{1j}				
Model for learning rate of				

Figure 3. Mean Standardized Engagement Score Gaps by Grade by Race, First-Grade Cohort



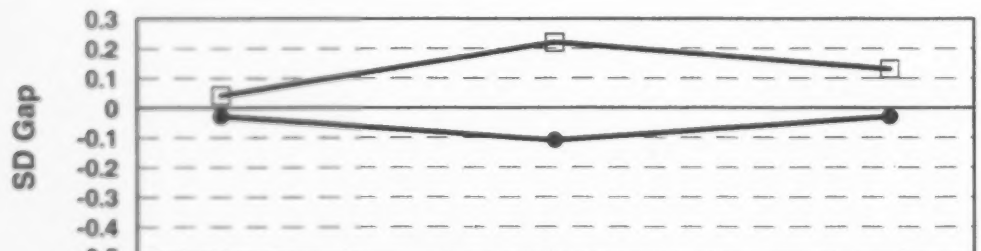
	1st,s	2nd	3rd
AA-W	-0.35	-0.43	-0.35
L-W	-0.33	-0.25	-0.07
NA-W	-0.18	-0.14	-0.15

Grade



	1st,s	2nd	3rd
AA-W	-0.07	-0.09	-0.1
L-W	-0.01	0.13	0.04

Grade



	1st,s	2nd	3rd
AA-W	-0.03	-0.11	-0.03
L-W	0.04	0.22	0.13

Grade

standardized Latino-White engagement gap that began at one-third of a standard deviation at the beginning of first grade dropped to less than one-tenth of a standard deviation by the end of third grade. Among high-achievers, the engagement levels reported by African American and Latino students' teachers were very similar to the levels reported by White students' teachers. In fact, Latino students who scored at or above the 75th percentile received higher engagement scores than their White peers during all three years, and Latino students at or above the 50th percentile received higher scores during two of three years.

To minimize potential regression artifacts, and to estimate the statistical significance of the longitudinal achievement differences, we analyzed three-year learning outcomes (spring of 1st grade to spring of 3rd grade) for both groups of high-achievers ($\geq$50th percentile, and $\geq$75th percentile) using multilevel models. For the student engagement outcome, we examined three-year longitudinal trends over the same period, but we identified high achievers on the basis of their spring of 1st grade test scores. In addition to race/ethnicity (White, African American, and Latino), the multilevel models included SES and gender as predictors. All hierarchical models predicted two parameters: (1) students' initial scores at time 1 (spring of 1st grade for achievement, and fall of first grade for engagement); and (2) the linear growth or learning rate. In each case, the students' three scores were modeled at level 1, nested within students at level 2 of the hierarchical model. The results of these analyses appear in Appendix B.

Table B1 in Appendix B summarizes the results for math achievement for first-grade cohort students who began first grade at or above the 50th national percentile. The model for the initial math concepts and applications scale score, β_{00}, indicates that the average spring of first grade scale score was 595.38. Because this is a conditioned model, this coefficient represents the average score for a hypothetical student with a value of "0" for each of the predictors. Because

the composite SES factors was standardized, a value of "0" on this measure refers to a student with a mean value. Also, the dummy code indicating a White student was omitted from the model. Thus, the conditional intercept indicates the average spring of first grade scale score of 595.38 is for a White girl of average SES (i.e., black = 0, Latino = 0, gender = 0, and SES = 0).

The coefficients are unstandardized beta values, so they are interpretable directly. For instance, if this hypothetical student had an SES one standard deviation higher (a one-unit change equals one standard deviation), her predicted initial score would be 613.82, or 18.44 points higher. The accompanying *t* ratios test the hypothesis that the beta coefficients are significantly different from 0. It can be seen that SES, gender, and black were significant predictors of the initial scale score. In other words, students who were African American, female, and of lower SES levels had significantly lower initial test scores during the spring of first grade.

Because we were interested primarily in testing the statistical significance of the longitudinal learning differences associated with race/ethnicity, gender, and SES, the model for the learning rate is of considerable substantive interest. Using the same predictors, the average growth coefficient per testing cycle for the same hypothetical student was 59.18 scale score points. Only gender was a statistically significant predictor of students' longitudinal learning rates. Despite the fact that all students in the analysis achieved at or above the 50th percentile at the beginning of first grade, males learned at significantly slower rates than their female peers. Although African American students grew at a slightly slower pace than White students, after taking into account SES and gender, the difference was not statistically significant.

Because the beta coefficients are unstandardized, they are not directly comparable across the variables within and between the various models. Therefore, we computed average monthly

learning rates across the period of the study for each cohort and subject. These average monthly learning rates may be used to interpret and to compare the magnitudes of the unstandardized beta coefficients. For both first-grade and third-grade cohort students, there were approximately 24 months between the first and final testing periods used in the hierarchical models. The coefficients reported for the learning rates in the "unconditional" hierarchical model, or a preliminary model with no student-level predictors, represent the average vertical scale score change per test cycle. Because there were two test cycles over the three years, we computed the average monthly learning rate for each cohort by multiplying the average learning rate coefficient from the unconditional models (results not shown) by 2, and by dividing that figure by the total number of months mentioned above.

For instance, we derived an average monthly learning rate for first-grade cohort students' math achievement of 4.69 scale score points. This figure was calculated by multiplying the average learning rate coefficient of 56.28 from the unconditional model by 2, and by dividing the resulting figure of 112.56 by 24 months. Based on this average monthly gain estimate of 4.69, one may interpret the magnitude of the learning gap between males and females as the Gender coefficient of –5.52 divided by 4.69, or 1.2 months. In other words, over the course of one testing cycle, the achievement of males grew at a rate that was 1.2 months slower than that of females. Assuming a linear trend, over the two testing cycles the model predicted a 2.35 month gap between the learning rates of males and females. This result indicates that the initial 1.87 month (8.75 / 4.69) achievement advantage that males held during the spring of first grade was erased by the end of third grade.

Table B2 summarizes a model that is identical in all respects aside from the subsample of students. In this case, we modeled the longitudinal math outcomes for students who were at or

above the 75th national percentile at the start of first grade. The results were very similar. Only gender was a significant predictor of the learning rate, with females learning at a faster rate than males.

Table B3 provides the results for reading achievement for first-grade cohort students who began first grade at or above the 50th national percentile. Results from the unconditional model indicated that the average learning rate was 48.5 scale score points. This is equivalent to an average monthly learning rate of 4.04 scale score points. As the results in Figure 2 appeared to suggest, this hierarchical model indicated that initially high-achieving African American students learned at significantly slower rates than their White peers. The statistical results suggest that as the African American students progressed from the spring of first grade to the spring of third grade they fell approximately one and three-quarters months behind their White counterparts (-3.53 * 2 / 4.04 = -1.74). Although the coefficient for the learning rate for African American students who began first grade at or above the 75th percentile was similar in magnitude, due in part to a smaller sample it was estimated with considerably more error and, therefore, did not reach statistical significance (see Table B4).

Tables B5 and B6 present the longitudinal multilevel analyses of the final student outcome for first-grade-cohort students: student engagement. As stated previously in Section 2.1, the student engagement measure was a composite factor based on teachers responses to 10 items that asked how strongly they agreed or disagreed that a student expressed attitudes and exhibited behaviors indicating an interest in school work and a desire to learn. The specific items that made up this measure, and their associated factor loadings, are presented in Table A2 of Appendix A. Results from the unconditional models indicated that the average initial engagement scores were .38 and .55 for students who achieved, respectively, at or above the 50th

and 75th percentiles during the spring of first grade. Because the engagement measure was standardized to have a mean of 0 and standard deviation of 1, this indicates that these groups of students began the longitudinal period with engagement scores that were nearly two-fifths of one standard deviation and over one-half of a standard deviation higher than the score for the overall population of students. For both high-achieving subsamples, the unconditional models indicated that the engagement growth rate was -.03, which suggests that the engagement scores for the entire group declined slightly over time. In other words, as all students went through school they became slightly less engaged in classroom activities.

The model for the intercept, or initial engagement score, revealed that students of higher SES levels, Latinos, and girls were rated as more engaged than their counterparts. The SES and Gender predictors were especially powerful. Regardless of race, and despite beginning with similar test scores, the model predicted that relatively low SES (SES = -1) boys (Gender = 1) had initial engagement scores that were .35 *SD*s lower than girls of average SES. Although the gender and race of the student were not significantly related to changes in engagement over time, the model for the engagement growth rate did indicate that the initial differences between the engagement levels of higher and lower SES children expanded significantly over time. Therefore, among both groups of initially high-achieving students (i.e., $\geq 50^{th}$ and $\geq 75^{th}$ percentiles), the process of disengagement appears to begin in the first few years of formal schooling for students of lower socioeconomic levels.

Third-Grade Cohort Results

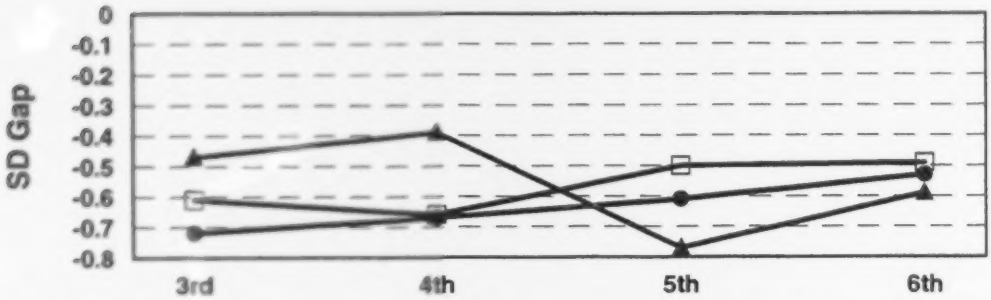
The results for the third-grade cohort are presented in Figures 4 through 6. Beginning with the Total Weighted Sample in Figure 4, it appears that the standardized math achievement

gaps between African American and White students, and between Latino and White students closed somewhat over time from third through sixth grade. African American students began the study in the spring of third grade slightly less than three-quarters of one *SD* behind White students, and by the end of sixth grade African Americans were about one-half of one standard deviation behind their White peers. The gap between Latino and White students in third grade was .61, and by the end of the sixth grade the gap was less than one-half of one standard deviation. In contrast, the gap between Native American and White students increased from .47 *SD*s during the spring of third grade to .59 *SD*s by the end of sixth grade. Figure 5 shows slightly different trends for reading achievement. Specifically, African American students remained .79 *SD*s behind White students, and the gap between Native American and White students expanded from .40 to .61 *SD*s, which was a slightly larger increase than that found for math. The initial reading achievement gap of .86 *SD*s between Latinos and Whites was larger than the initial Latino-White math achievement gap, but similar to the math result, this gap declined slightly over time

The longitudinal trends for high-achieving Latino students displayed in Figures 4 and 5 resemble those for the total Latino sample, in that the gaps decline slightly over time. Similar to the results for the first-grade cohort, the reading and math gaps between African American and White students from the 75th percentile or greater subsample expanded. However, for students at or above the 50th percentile on the baseline tests, the gaps remained relatively constant. Because virtually all of the widening of the African American-White achievement gaps for the 75th percentile or greater subsamples occurred between the first and second testing occasions, a significant portion of these increases may be due to regression effects. The final outcome for third-grade cohort students was student engagement. The results for the Total Weighted Sample

Figure 4. Mean Standardized Math Score Gaps by Grade by Race, Third-Grade Cohort

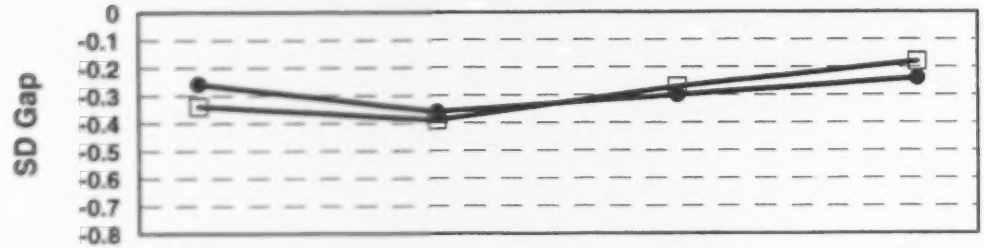
Total Weighted Sample



	3rd	4th	5th	6th
AA-W	-0.72	-0.67	-0.61	-0.53
L-W	-0.61	-0.66	-0.5	-0.49
NA-W	-0.47	-0.39	-0.77	-0.59

Grade

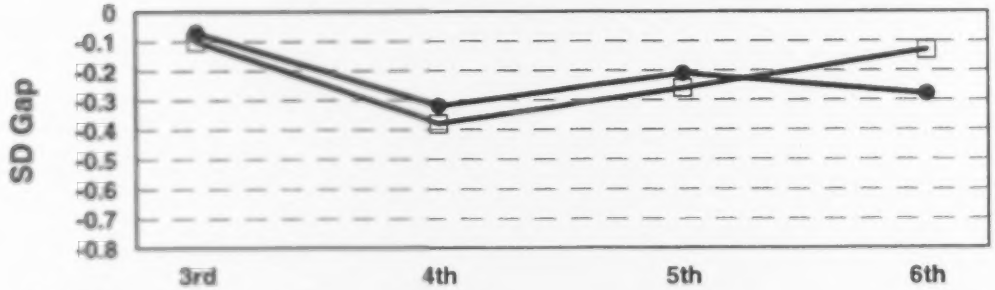
50th Percentile or Greater Subsample



	3rd	4th	5th	6th
AA-W	-0.26	-0.36	-0.3	-0.24
L-W	-0.34	-0.39	-0.27	-0.18

Grade

75th Percentile or Greater Subsample

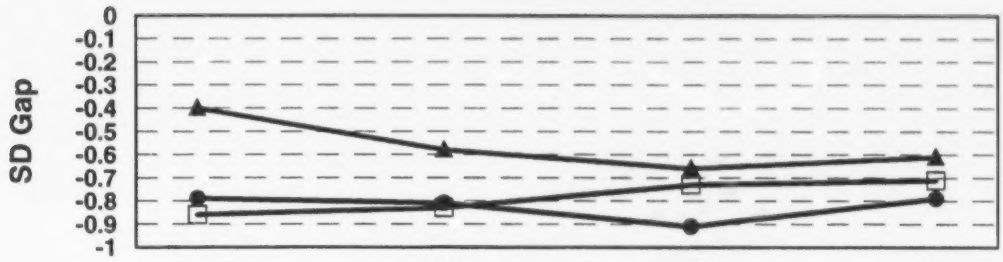


	3rd	4th	5th	6th
AA-W	-0.07	-0.32	-0.21	-0.28
L-W	-0.1	-0.38	-0.26	-0.13

Grade

Figure 5. Mean Standardized Reading Score Gaps by Grade by Race, Third-Grade Cohort

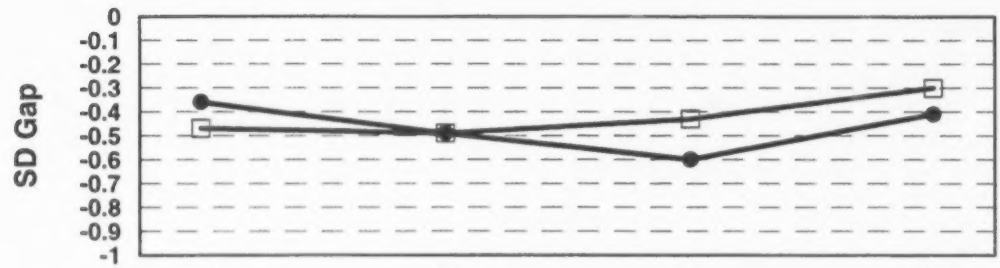
Total Weighted Sample



	3rd	4th	5th	6th
AA-W	-0.79	-0.81	-0.91	-0.79
L-W	-0.86	-0.83	-0.73	-0.71
NA-W	-0.4	-0.58	-0.66	-0.61

Grade

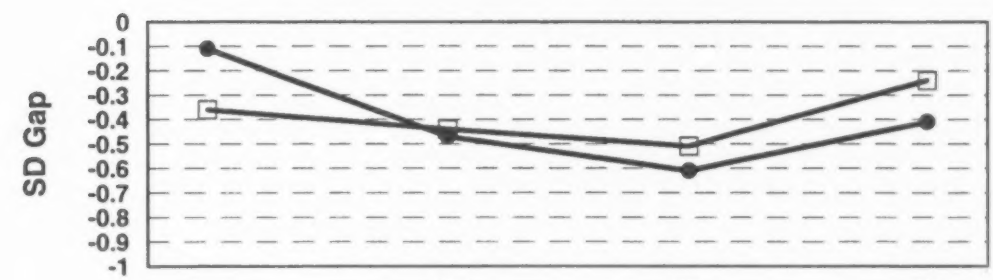
50th Percentile or Greater Subsample



	3rd	4th	5th	6th
AA-W	-0.36	-0.49	-0.6	-0.41
L-W	-0.47	-0.49	-0.43	-0.3

Grade

75th Percentile or Greater Subsample



	3rd	4th	5th	6th
AA-W	-0.11	-0.47	-0.61	-0.41
L-W	-0.36	-0.44	-0.51	-0.24

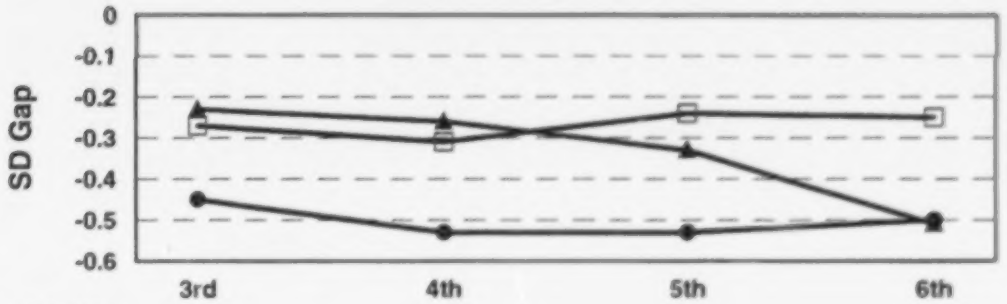
Grade

in Figure 6 suggest that the standardized engagement score gaps between African American and White students, and between Latino and White students remained relatively consistent in magnitude from third through sixth grade. As Native Americans progressed through these grades, though, their teachers reported consistently lower levels of engagement with classroom activities. The standardized Native-American-White engagement gap, which began at less than one-quarter of one standard deviation at third grade, increased to over one-half of a standard deviation by the end of sixth grade. For high-achievers, the initial engagement levels of African American and Latino students were very similar to the those of White students. For the subsample of students at or above the 75th percentile on the baseline test, African American students received initial engagement scores nearly one-tenth of a standard deviation higher than those for their White peers. However, by the end of sixth grade, these initially high-achieving African American students' had engagement scores that were .13 *SD*s lower than the scores for their White counterparts.

Table B7 through B12 in Appendix B provide the hierarchical model results for each of the three outcomes and for both of the high-achieving subsamples. Results for math achievement for third-grade cohort students who began third grade at or above the 50th national percentile are summarized in Table B7. The unconditional model (results not shown) for the initial total math scale score, or β_{00}, indicated that the average spring of fourth grade scale score was 720.1, and the average learning rate, or β_{01}, was 19.2. Using the same calculation we described earlier, this learning rate is equivalent to an average monthly gain of 1.6 scale score points. The conditional model presented in Table B7 reveals that SES, black, and Latino were significant predictors of the initial scale score. In other words, students who were African

Figure 6. Mean Standardized Engagement Score Gaps by Grade by Race, Third-Grade Cohort

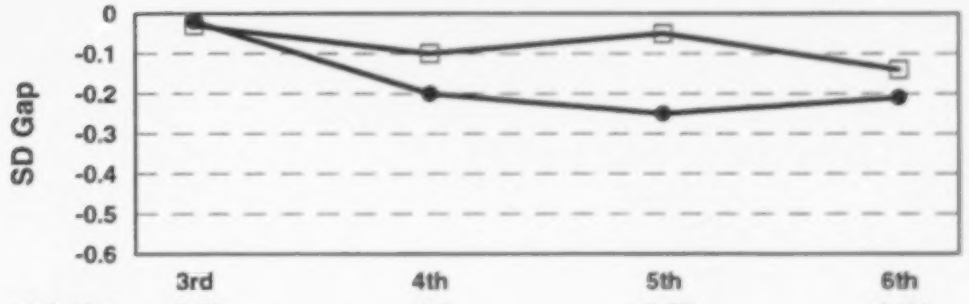
Total Weighted Sample



	3rd	4th	5th	6th
AA-W	-0.45	-0.53	-0.53	-0.5
L-W	-0.27	-0.31	-0.24	-0.25
NA-W	-0.23	-0.26	-0.33	-0.51

Grade

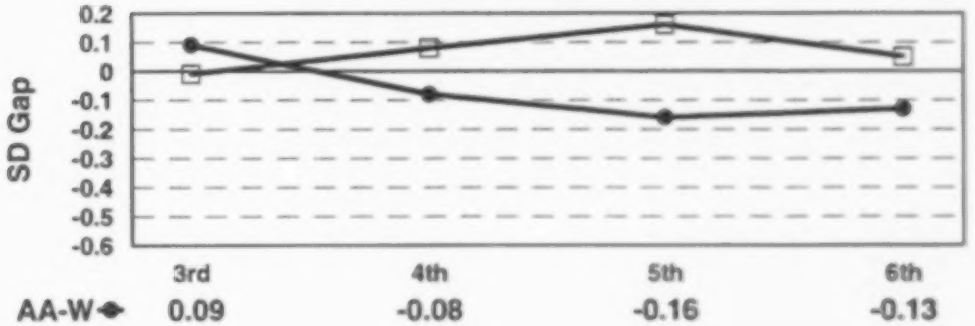
50th Percentile or Greater Subsample



	3rd	4th	5th	6th
AA-W	-0.02	-0.2	-0.25	-0.21
L-W	-0.03	-0.1	-0.05	-0.14

Grade

75th Percentile or Greater Subsample



	3rd	4th	5th	6th
AA-W	0.09	-0.08	-0.16	-0.13
L-W	-0.01	0.08	0.16	0.05

Grade

American, Latino, and of lower SES levels had significantly lower initial test scores during the spring of fourth grade. The model for the learning rate indicated that the Gender and Latino coefficients were significantly greater than 0. The model predicted that, after controlling for the other variables in the model, females learned at a faster rate than males and Latinos learned at a faster rate than White students. The learning advantage for females was substantial. Based on our estimate of the average monthly learning rate, over the two school years the girls' achievements grew at a rate that was nearly 5 months faster than the rate for boys. Table B8, which summarizes the results for the subsample of students at or above the 75th percentile, provides similar results. However, among this group of high achievers, Latino students did not grow academically at a rate that was significantly different from the rate for White students.

Table B9 shows the results for reading achievement for third-grade cohort students who began third grade at or above the 50th national percentile. The unconditional model indicated that the average learning rate was 13.1 scale score points, which is equivalent to an average monthly learning rate of 1.09 scale score points. Similar to the results for math achievement, the model for the learning rate indicated that Gender and Latino were significant predictors of longitudinal reading growth. The statistical results from the model indicated that as males progressed from the spring of third grade to the spring of sixth grade they fell slightly more that two months behind their female counterparts. After controlling for gender and SES, Latino students grew at a rate that was 4.6 months faster than their White peers' learning rate. This difference in the White and Latino growth rate suggested that by the end of sixth grade the Latino students had eliminated nearly 60% of the initial gap of 8.69 scale score points. Table B10 provides the results for the subsample of students who began third grade at or above the 75th percentile.

These results revealed no significant differences across race, gender, or SES in students' longitudinal learning rates.

Tables B11 and B12 present the multilevel analyses of the third-grade-cohort students' student engagement scores. The results from the unconditional models were virtually identical to those found for the first-grade cohort. The average initial engagement scores were .37 and .54 for students who achieved, respectively, at or above the 50th and 75th percentiles during the spring of third grade. This indicates that these groups of students began the longitudinal period with engagement scores that were nearly two-fifths of one standard deviation and over one-half of a standard deviation higher than the score for the overall population of students. For both high-achieving subsamples, the unconditional models indicated that the engagement growth rate was -.02, which suggests that as all students went through school they became slightly less engaged in classroom activities.

Both models summarized in Tables B11 and B12 indicated that girls and students of higher SES levels were rated as more engaged than their counterparts at the initial time point in third grade. The model for the engagement growth rate indicated that the initial differences between the engagement levels of higher and lower SES children, and the initial differences between boys and girls, expanded significantly over time. In addition, in both high-achieving subsamples, African American students became significantly less engaged in classroom activities than their White peers. Therefore, similar to the results for the first-grade cohort, the process of disengagement appears to continue through the third to sixth grades for students of lower socioeconomic levels. Also, after taking into account SES, initially high-achieving African American students disengaged at a significantly faster rate than comparable White students.

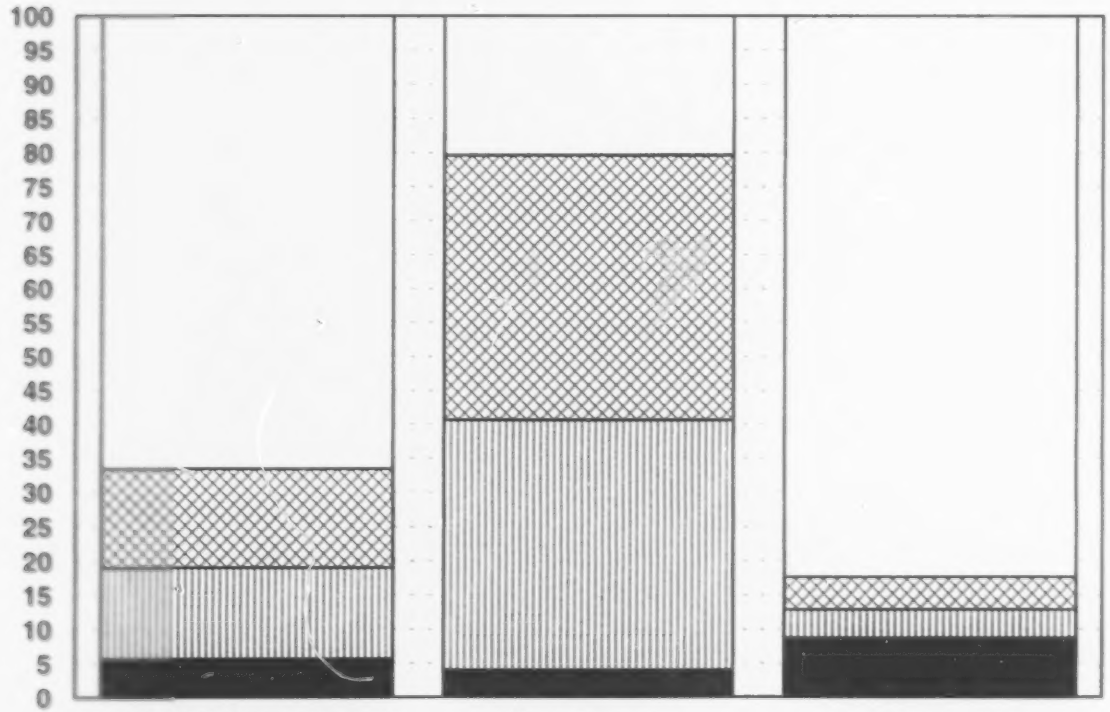
Longitudinal Trends for High Achievers from High- and Low-Poverty Schools

Additional analyses contrasted the longitudinal achievement and engagement trends for high-achievers attending high- and low-poverty schools. First, national data for both grade cohorts from *Prospects* indicated that African American and Latino students were strikingly overrepresented within high-poverty schools (i.e., 75% or more of the students receive free lunches) and underrepresented within low-poverty schools (i.e., 25% free lunch or less). As Figures 7 and 11 show, Latino and African American students together make up from 75% to over 80% of the population of students who attended high-poverty schools. In contrast, Latino and African American students represented only about 10% of the students who attended low-poverty schools.

The longitudinal math outcomes for initial high achievers from the first-grade cohort depicted in Figure 8 suggested that, relative to those who attended low-poverty schools, the longitudinal achievement growth of students who attended high-poverty schools was slower. Also, as Figure 9 suggests, initially high-achieving African American and Latino students from high-poverty schools learned reading at slower rates than their peers from low-poverty schools. The results for student engagement portrayed in Figure 10 were mixed. African American students from high poverty schools became more disengaged over time relative to African American students from low-poverty schools, but the opposite was true for Latino students.

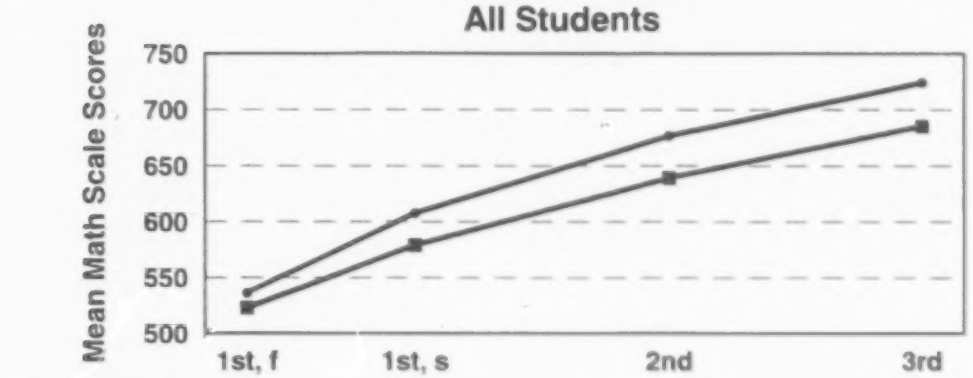
For third-grade cohort initial high achievers, there was only one notable longitudinal difference between the learning rates of students from high- and low-poverty schools: the reading achievement of African American students, which is shown in Figure 13. However, as the results in Figure 14 indicate, all students from high-poverty schools disengaged from school activities at faster rates than their peers from low-poverty schools. Overall, the results parallel

Figure 7. Percent of Children by Race/Ethnicity in High- and Low-Poverty Schools, First-Grade Cohort



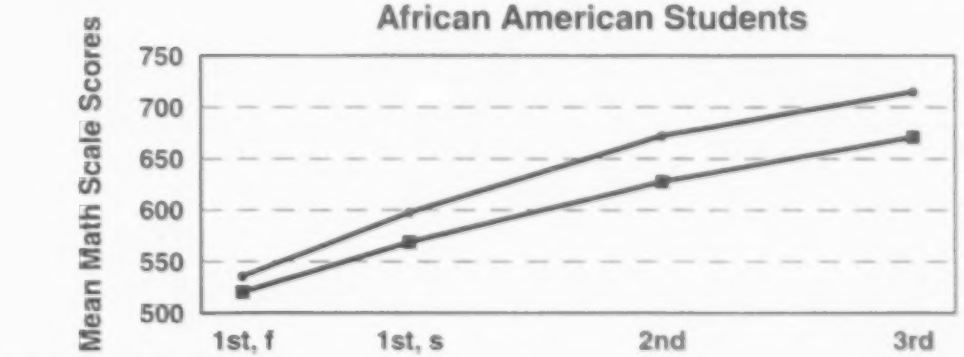
	Total Weighted Sample	High Poverty	Low Poverty
White	66.6	20.4	82.4
African American	14.4	39	4.7
Hispanic	13.4	36.6	4.2
Other	5.6	4	8.7

Figure 8. Mean Math Scale Scores by Grade by School Poverty Level, First-Grade Cohort, 50th Percentile or Greater



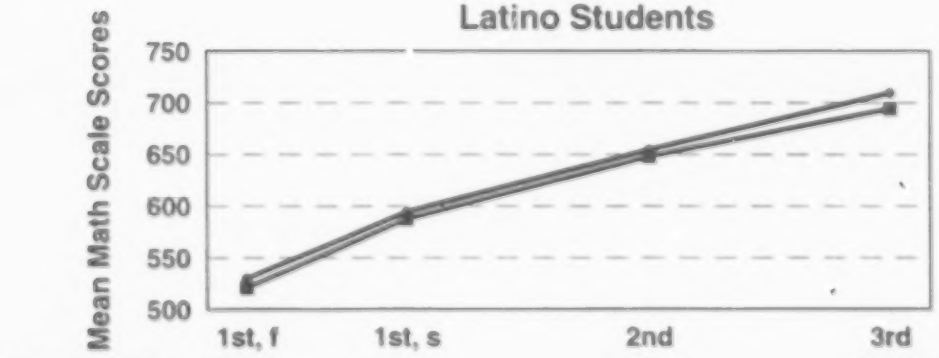
	1st, f	1st, s	2nd	3rd
Low Poverty	536.1	607.36	676.86	723.98
High Poverty	522.83	578.8	639.07	685.2

Grade



	1st, f	1st, s	2nd	3rd
Low Poverty	535.29	597.13	671.9	714.75
High Poverty	519.94	568.55	627.29	670.68

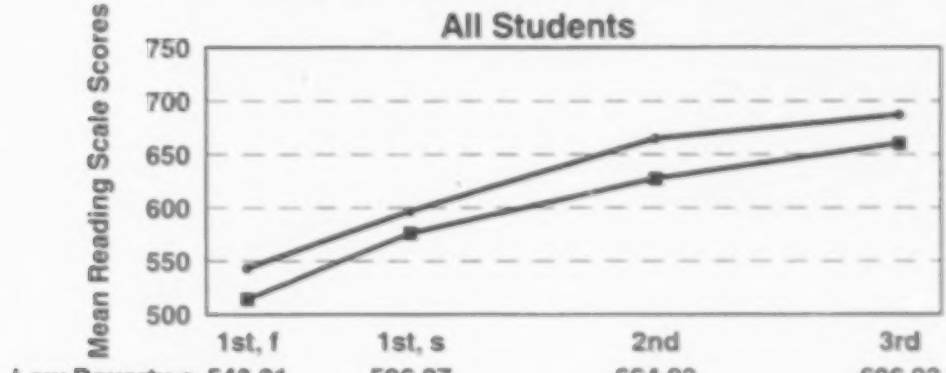
Grade



	1st, f	1st, s	2nd	3rd
Low Poverty	529.68	594.11	654.2	709.43
High Poverty	520.7	587.31	647.57	694.09

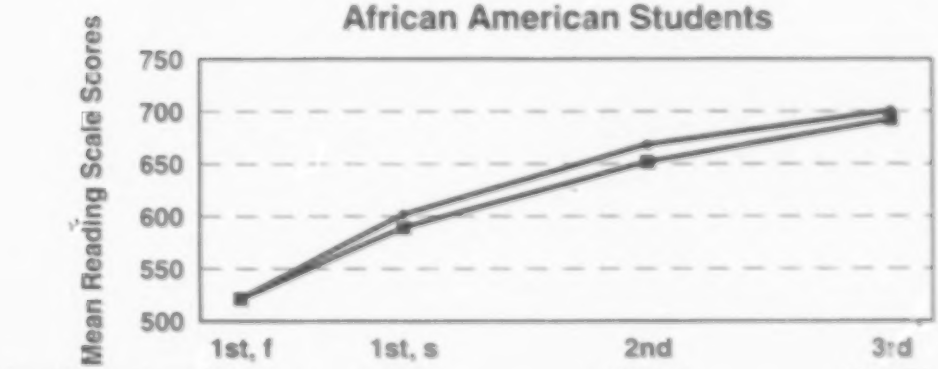
Grade

Figure 9. Mean Reading Scale Scores by Grade by School Poverty Level, First-Grade Cohort, 50th Percentile or Greater



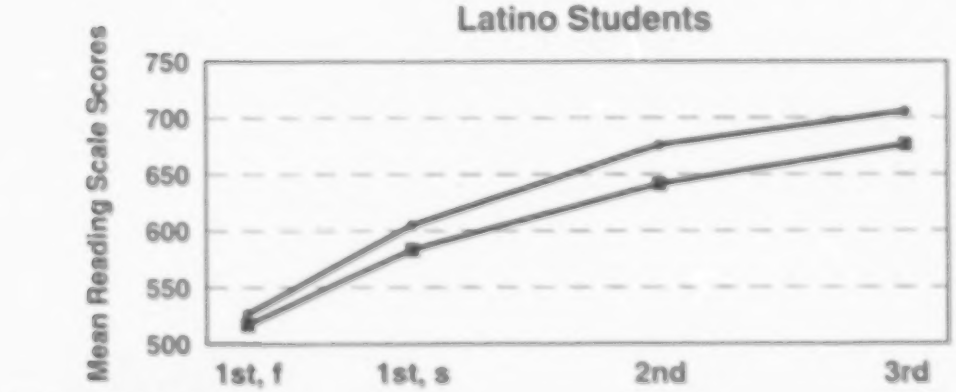
	1st, f	1st, s	2nd	3rd
Low Poverty	543.21	596.87	664.93	686.93
High Poverty	514.14	576.12	627.37	660.11

Grade



	1st, f	1st, s	2nd	3rd
Low Poverty	521.26	601.71	668.35	700.76
High Poverty	520.89	589.01	651.78	692.23

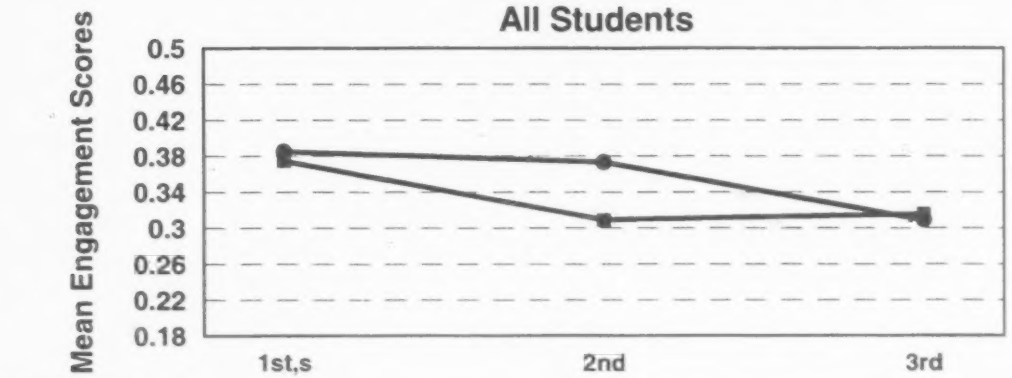
Grade

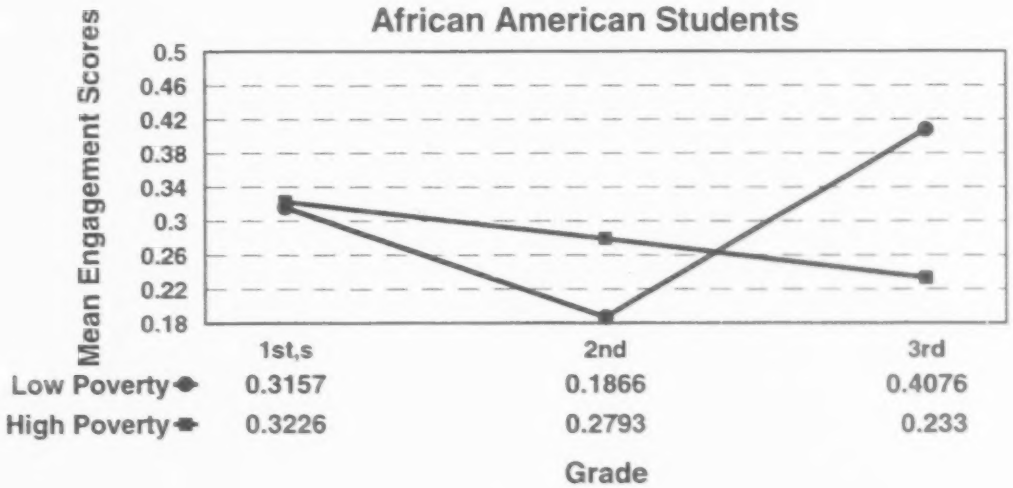


	1st, f	1st, s	2nd	3rd
Low Poverty	526.63	604.78	675.85	705.6
High Poverty	516.87	583.21	641.2	676.1

Grade

Figure 10. Mean Engagement Scores by Grade by School Poverty Level, First-Grade Cohort, 50th Percentile or Greater





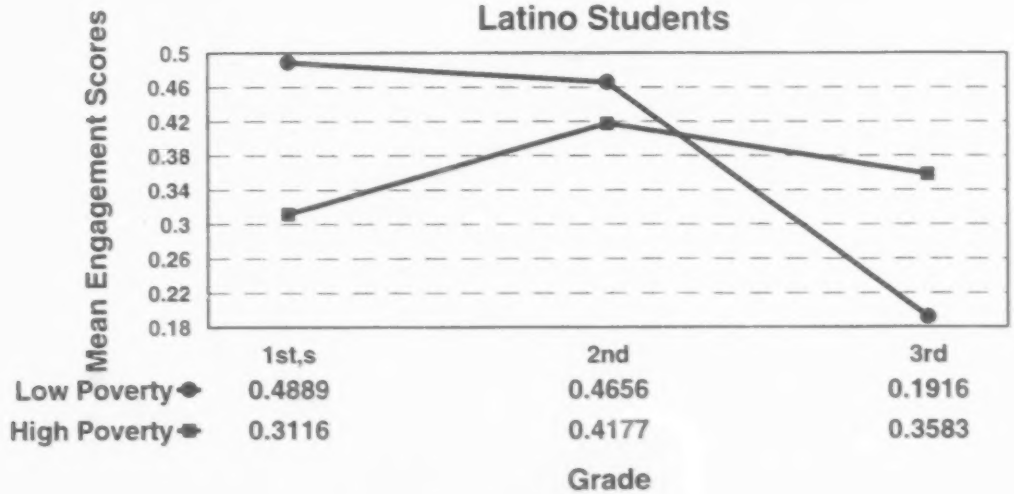
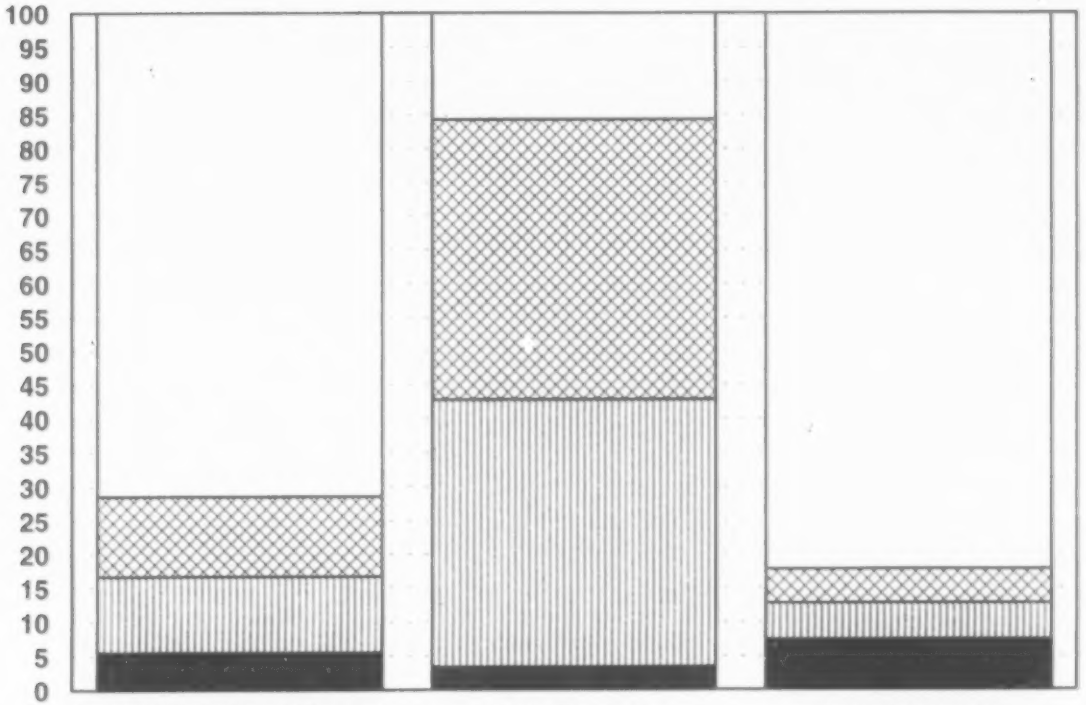
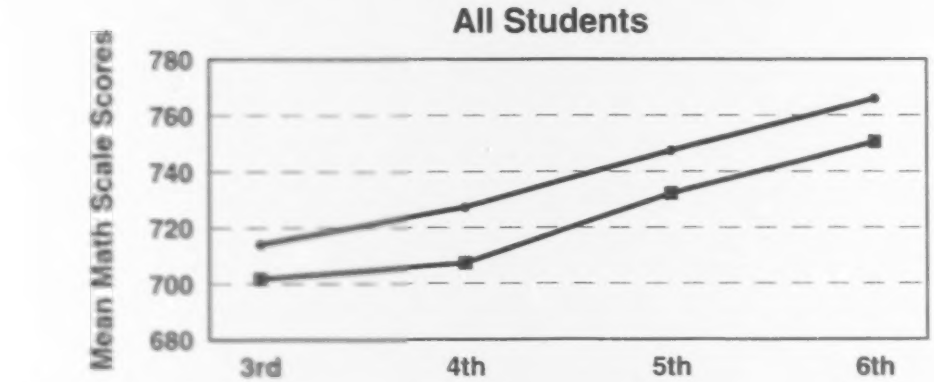


Figure 11. Percent of Children by Race/Ethnicity in High- and Low-Poverty Schools, Third-Grade Cohort



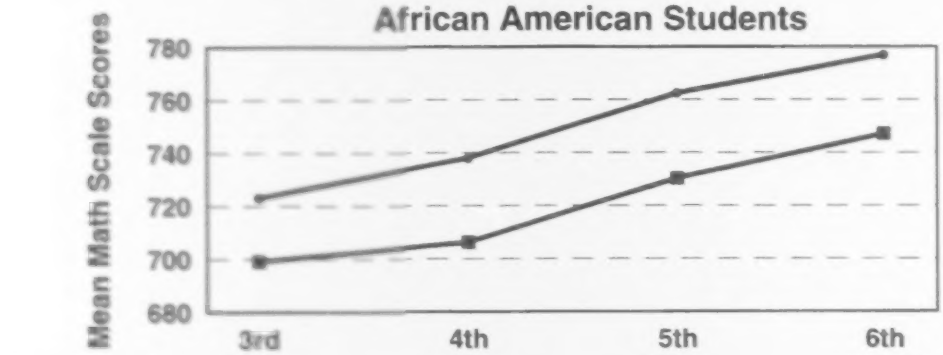
	Total Weighted Sample	High Poverty	Low Poverty
White	71.4	15.7	82.3
African American	11.9	41.5	5
Hispanic	11.2	39.4	5.3
Other	5.5	3.4	7.4

Figure 12. Mean Math Scale Scores by Grade by School Poverty Level,Third-Grade Cohort, 50th Percentile or Greater



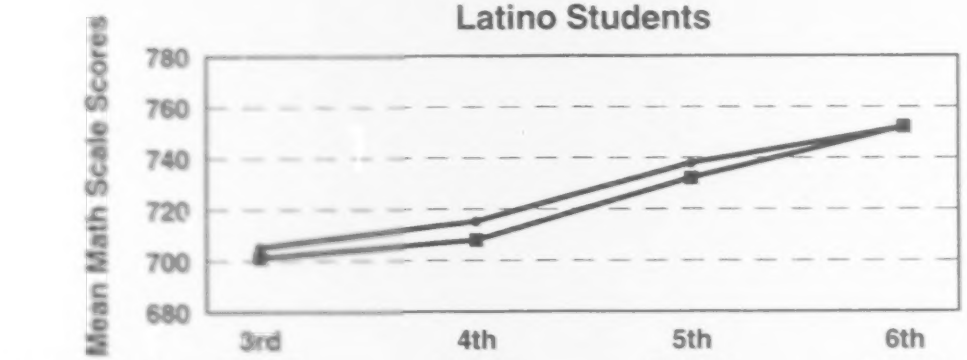
	3rd	4th	5th	6th
Low Poverty	714.07	727.32	747.52	766.03
High Poverty	701.75	707.3	732.17	750.61

Grade



	3rd	4th	5th	6th
Low Poverty	723.02	738.01	762.38	776.89
High Poverty	699.11	706.19	730.27	747.05

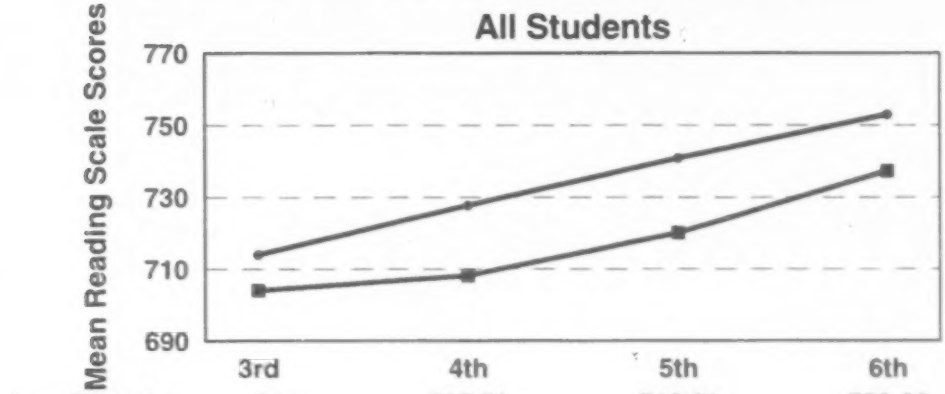
Grade

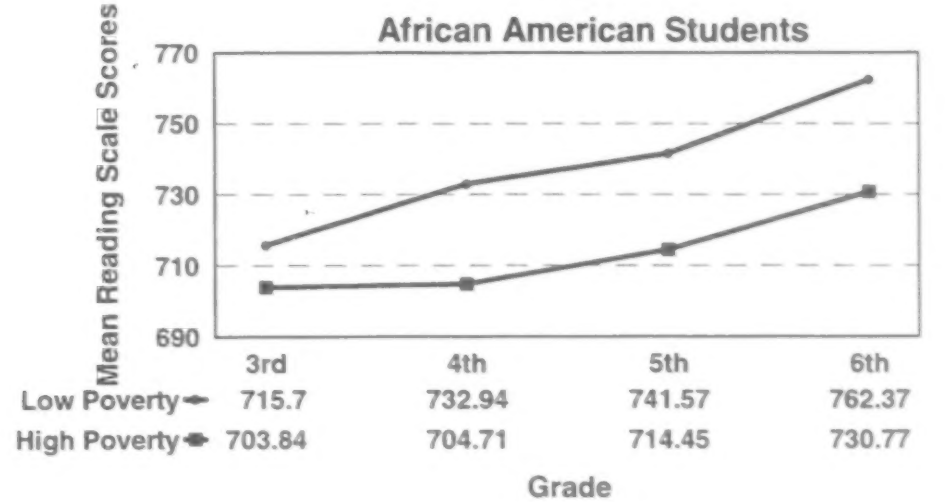


	3rd	4th	5th	6th
Low Poverty	705.17	715.18	737.88	752.01
High Poverty	701.19	707.9	732.08	752.19

Grade

Figure 13. Mean Reading Scale Scores by Grade by School Poverty Level, Third-Grade Cohort, 50th Percentile or Greater





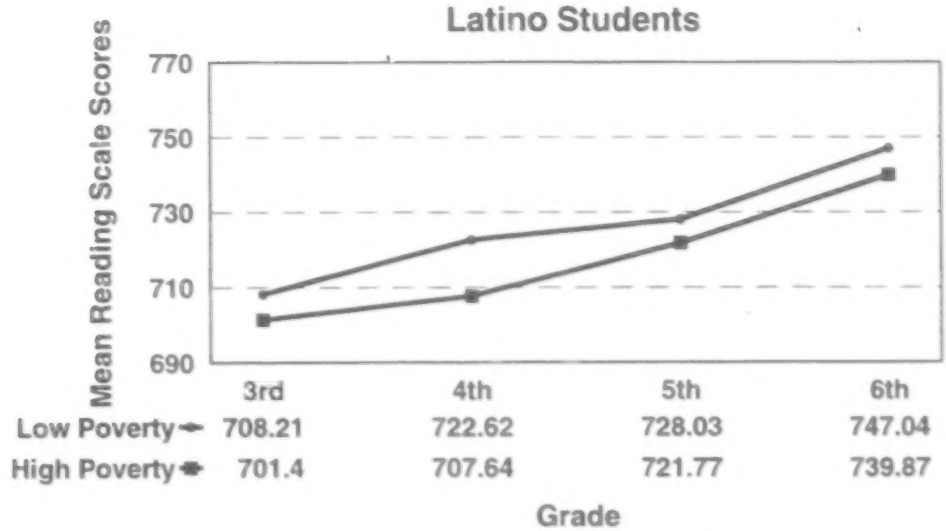
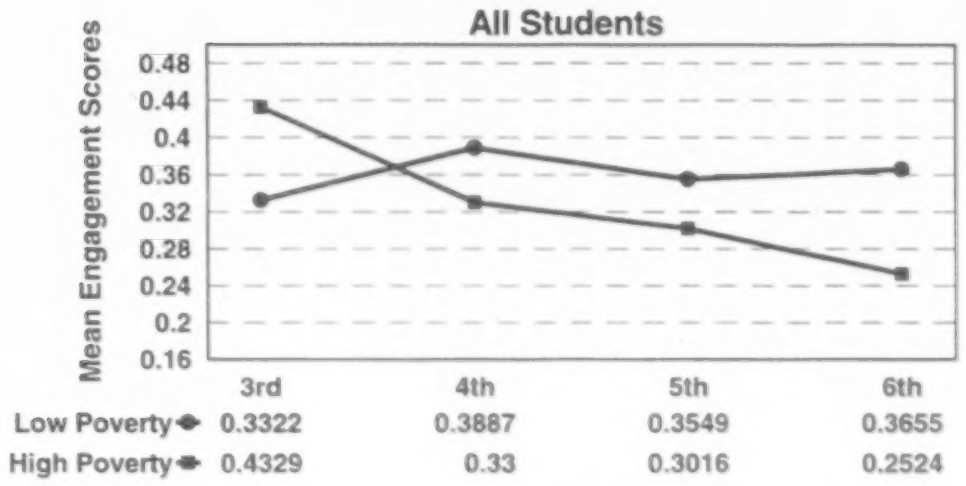
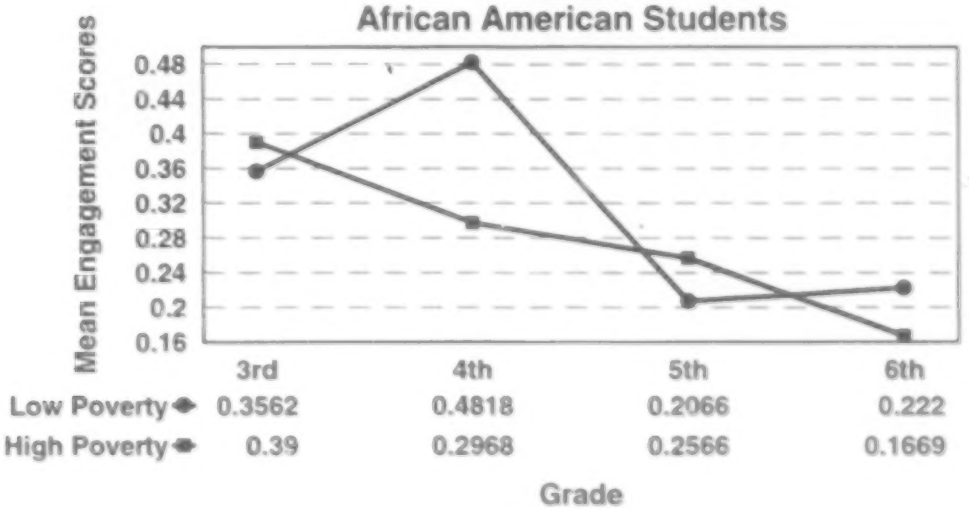
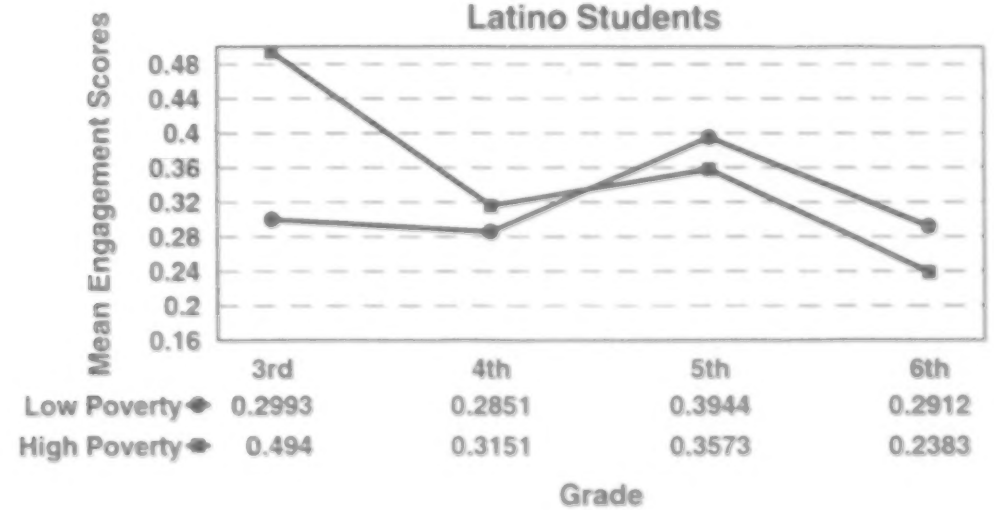


Figure 14. Mean Engagement Scores by Grade by School Poverty Level, Third-Grade Cohort, 50th Percentile or Greater







the findings of Kennedy, Jung, & Orland (1986), which suggested that the achievement gaps between students attending high- and low-poverty schools grew larger from first to third grade, and then remained roughly constant through the remaining elementary grades.

Analyses of Special Strategies for African American Students

Additional figures and multilevel analyses contrasted longitudinal math and reading achievement outcomes for African American students who attended high-poverty *Prospects* schools (i.e., 75% of the students at the school were eligible for free or reduced price lunches) to those for African American who attended high-poverty *Special Strategies* schools. Preliminary analyses focused on longitudinal outcomes for all African American students, regardless of their initial achievement levels, and followup analyses assessed outcomes for initially high-achieving (at or above the 50th percentile) African American students. The preliminary analyses were performed for the first- and third-grade cohorts from *Prospects* and *Special Strategies*, and, due to limited samples of high-achieving *Special Strategies* students, the followup analyses of high-achievers were performed for the third-grade cohort only. Longitudinal outcomes for first-grade cohort students were based on four years of achievement data, and longitudinal results for third-grade cohort students were based on three years of data. Due to the relatively small samples from the *Special Strategies* study, these analyses combined the results found across several whole-school reform models. As stated previously, these reform designs were identified by the design developers and others as exemplars. The programs included:

- Comer's School Development Program (SDP);
- Success For All (SFA);
- Paideia;

- Chapter 1 schoolwide projects; and
- Chapter 1 extended-year programs.

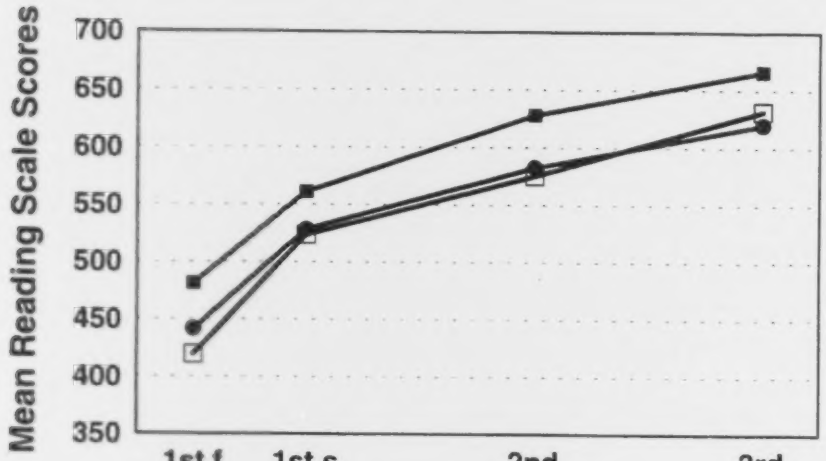
These comparisons between two groups of similarly disadvantaged schools addressed the question: Do African American students' longitudinal outcomes across a group of exemplars of replicable, whole-school reform designs differ significantly from the outcomes for African Americans across a national sample of high-poverty schools.

These analyses were conducted using methods similar to those employed above for the assessments of longitudinal learning outcomes for students from the *Prospects* study. Because we focused on similar samples of African American students, we did not compute any sort of standardized gaps, and we did not employ student-level predictors of longitudinal learning rates. Instead, we focused on one variable to explain longitudinal learning differences among African American children, that is, whether or not the student attend a *Special Strategies* school (Yes = 1; No = 0).

Figures 15 and 16 provide results for, respectively, the first- and third-grade cohorts. Each figure includes longitudinal learning trends for three groups (all students, regardless of race or school poverty level, from *Prospects*, African American students from high-poverty *Prospects* schools, and African American students from *Special Strategies* schools), on two outcome measures (CTBS/4 scale scores for reading and math). Figure 17 provides the same results for initially high-achieving African American students from *Prospects* and *Special Strategies*, and for all students from *Prospects*.

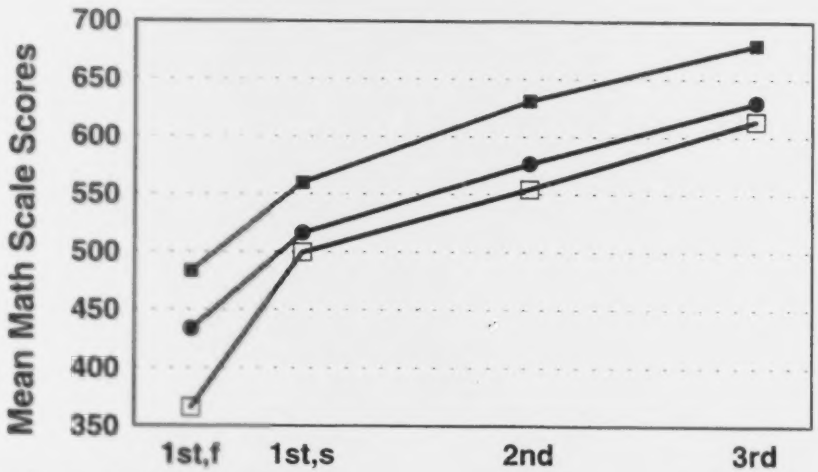
With the exception of math achievement for the first-grade cohort, all longitudinal learning trends in the figures appear to favor African American students in the *Special Strategies*

Figure 15. Mean Scale Scores by Grade and by Group for the First-Grade Cohorts



	1st,f	1st,s	2nd	3rd
All Students	481.26	560.99	628.04	666.08
Af.Amer. (Hi-Pov)	441.51	528.21	582.37	620.01
Af.Amer. (Spec. Strat.)	419.18	523.53	575.22	631.71

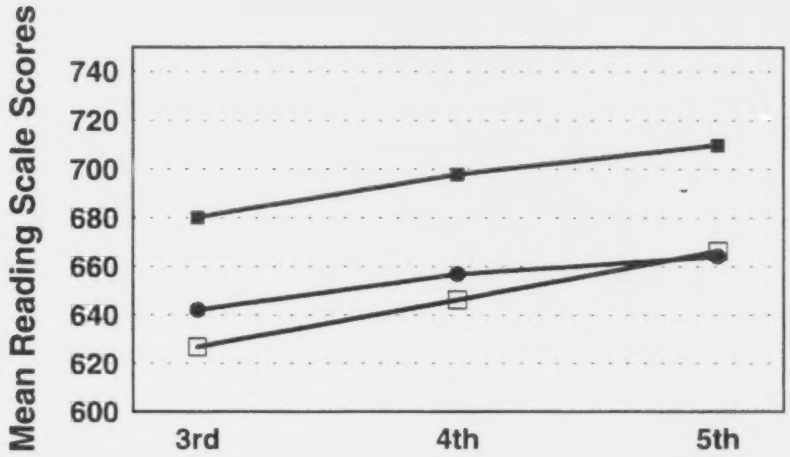
Grade



	1st,f	1st,s	2nd	3rd
All Students	483.28	559.72	630.87	679.66
Af.Amer. (Hi-Pov)	433.5	515.83	576.31	629.6
Af.Amer. (Spec. Strat.)	365.87	499.29	554.29	613.73

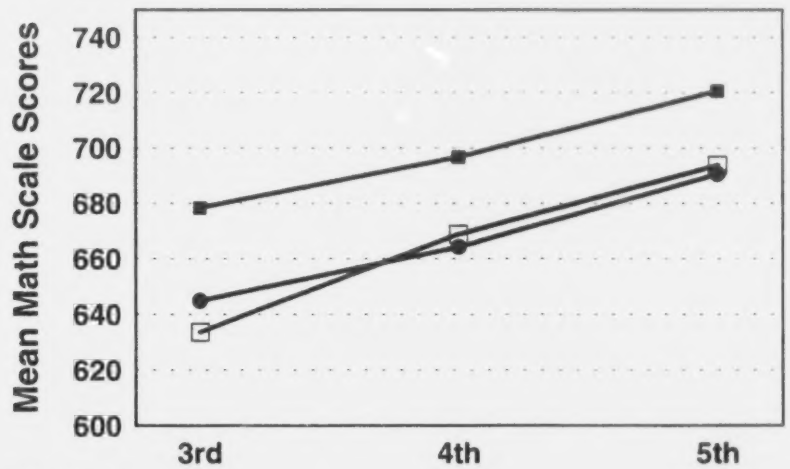
Grade

Figure 16. Mean Scale Scores by Grade and by Group for the Third-Grade Cohorts



	3rd	4th	5th
All Students	680.17	697.81	709.78
Af.Amer. (Hi-Pov)	641.94	656.71	663.97
Af.Amer. (Spec. Strat.)	626.69	646.12	666.21

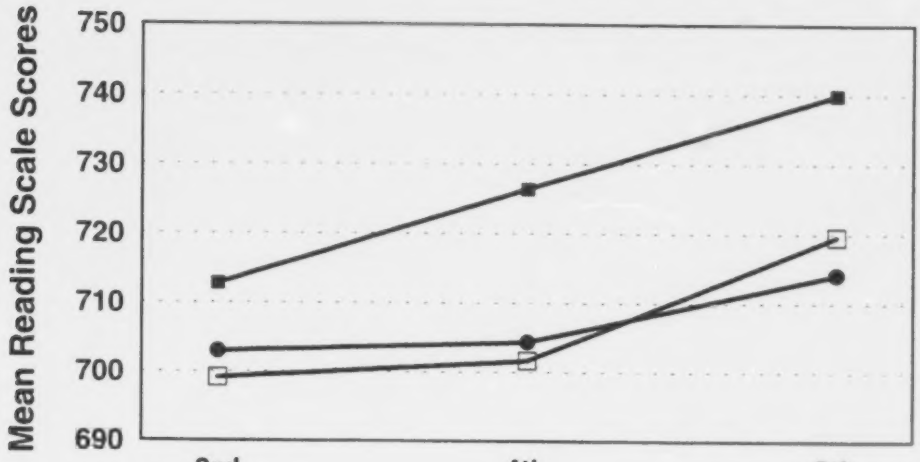
Grade



	3rd	4th	5th
All Students	678.31	696.68	720.52
Af.Amer. (Hi-Pov)	644.79	664.15	690.51
Af.Amer. (Spec. Strat.)	633.51	668.7	693.75

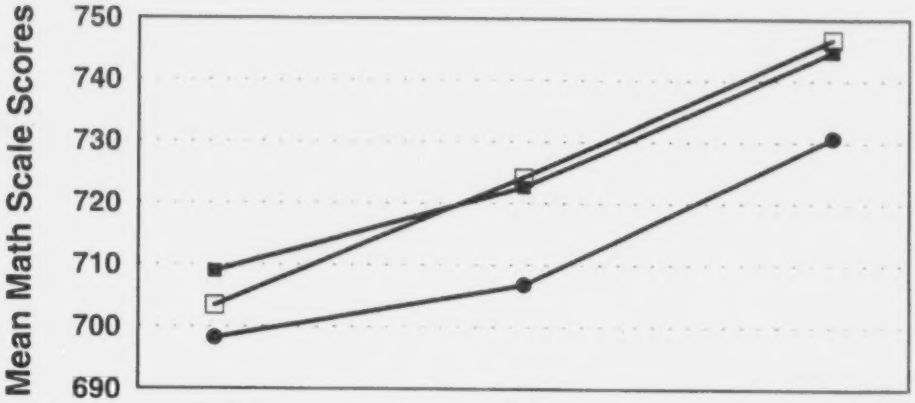
Grade

Figure 17. Mean Scale Scores by Grade and by Group of High-Achieving Students at or above the 50th Percentile in Third Grade



	3rd	4th	5th
All Students	712.73	726.37	739.93
Af.Amer. (Hi-Pov)	702.95	704.31	714.12
Af.Amer. (Spec. Strat.)	699.11	701.63	719.59

Grade



	3rd	4th	5th
All Students	708.95	722.57	744.66
Af.Amer. (Hi-Pov)	698.18	706.74	730.66
Af.Amer. (Spec. Strat.)	703.43	724.14	746.67

Grade

schools over African American students from the national sample of high-poverty schools. With the exception of the math high-achievers, displayed in Figure 17, all *Special Strategies* students started with lower test scores than their peers in high-poverty schools. Clearly, the *Special Strategies* schools faced challenging conditions. However, despite their high-poverty and low initial test scores, over the longitudinal period the *Special Strategies* African American students' achievement levels surpassed the levels of their similar high-poverty school peers. Although the sample sizes of high-achieving students from *Special Strategies* were rather small (reading-achievement sample: *Special Strategies* student $n = 81$, *Prospects* student $n = 714$; math-achievement sample: *Special Strategies* student $n = 63$, *Prospects* student $n = 831$), the results appear to be encouraging. Indeed, the 63 high-achieving African American students from the math achievement sample not only grew at a faster rate than their similar peers, but they also surpassed the achievement levels of all initially high-achieving students from the national sample.

For the most part, the hierarchical analyses confirmed these observations. Tables B13 through B16 show the results, by cohort and subject, of the analyses for all African American students from *Prospects* and *Special Strategies*, and Tables B17 and B18 show the math and reading results for the third-grade-cohort subsamples of initially high achieving students. Table B13 indicates that *Special Strategies* students' third grade math scores were 42 scale score points lower than *Prospects* students' scores. Although the *Special Strategies* coefficient for the learning rate indicated that *Special Strategies* students learned at a faster rate than their similar *Prospects* peers, the difference was not statistically significant. However, in all other analyses summarized in Tables B14 through B16 the African American students from *Special Strategies* learned at a faster rate than their similar peers within a national sample of high-poverty schools.

Similar to the results depicted in Figures 15 and 16, each hierarchical analysis summarized in Tables B14 through B16 indicated that *Special Strategies* students surpassed the achievement levels of their similar *Prospects* peers over the longitudinal period.

Unfortunately, as stated above, the samples of high-achieving *Special Strategies* African American students were quite small. This compromised the hierarchical analyses of high-achievers' longitudinal outcomes. The results for the high-achieving subsamples in Tables B17 and B18 indicated that *Special Strategies* students learned at faster rates than similar *Prospects* students, but the differences did not reach statistical significance. Although the coefficients appeared to be quite large, due in part to the small sample sizes, they were estimated with considerable error.

Analyses of Individual, School, and Classroom Characteristics

Tables 11 through 14 present, by race/ethnicity, the individual, classroom, and school characteristics for three samples: (1) the total weighted longitudinal *Prospects* sample; (2) the unweighted subsample of students performing at or above the 50th percentile; and (3) the unweighted subsample of students performing at or above the 75th percentile. Tables 11 and 12 summarize results for the first-grade cohort, and Tables 13 and 14 provide results for the third-grade cohort. Racial/ethnic comparisons within the total sample were made for White, African American, Latino, and Native American students. Due to an insufficient representation of Native American students performing at or above the 50th and 75th percentiles, reliable estimates of the characteristics of high-achieving Native American students could not be obtained. The construction of the variables presented in these tables is described extensively in Sections 2.1, 2.2, and 2.3.

Table 11. School and Classroom Characteristics by Race and Baseline Math Achievement, First-Grade Cohort

	All	White	Afric Amer	Latino	Nativ Amer	≥50 Math	White	Afric Amer	Latino	≥75 Math	White	Afric Amer	Latino
Characteristics of Peers													
Pct. White (*Mdn*)	85	90	45	34	71	81	89	30	17	84	89	33	20
	(29.95)	(18.52)	(32.99)	(29.86)	(23.16)	(31.97)	(20.76)	(30.22)	(30.05)	(30.29)	(20.58)	(31.27)	(32.85)
Pct. Free-lunch eligible (*Mdn*)	25	25	58	69	45	35	28	74	61	31	28	73	61
	(25.10)	(19.37)	(32.61)	(28.36)	(18.77)	(25.64)	(21.70)	(29.64)	(26.54)	(24.18)	(20.76)	(28.89)	(27.61)
Pct. <50th%ile Reading (*Mdn*)	26	25	38	40	40	30	27	49	48	27	26	49	41
	(18.59)	(15.52)	(21.30)	(22.69)	(15.19)	(18.02)	(15.77)	(19.78)	(21.10)	(17.23)	(15.41)	(20.40)	(21.79)
Pct. <25th%ile Reading (*Mdn*)	12	12	12	20	25	12	11	12	21	11	11	13	20
	(11.08)	(9.29)	(14.73)	(14.51)	(8.38)	(10.83)	(9.72)	(15.15)	(12.42)	(10.14)	(9.43)	(14.70)	(11.94)
Pct. <50th%ile Math (*Mdn*)	25	25	31	28	30	25	25	40	35	25	25	41	33
	(17.72)	(15.31)	(18.13)	(22.99)	(17.74)	(17.32)	(15.35)	(18.94)	(20.45)	(16.53)	(14.90)	(19.39)	(21.13)
Pct. <25th%ile Math (*Mdn*)	10	10	13	10	25	10	10	15	18	10	10	15	15
	(10.23)	(8.52)	(12.91)	(14.19)	(10.12)	(9.80)	(8.74)	(13.67)	(11.14)	(9.30)	(8.75)	(12.88)	(9.76)
Individual Characteristics													
Math GPA (*M*)	3.36	3.47	3.04	3.05	3.21	3.59	3.65	3.41	3.54	3.69	3.73	3.56	3.70
	(.81)	(.75)	(.90)	(.79)	(.85)	(.61)	(.59)	(.71)	(.56)	(.55)	(.54)	(.61)	(.44)
Reading GPA (*M*)	3.16	3.30	2.71	3.02	2.88	3.40	3.46	3.17	3.39	3.52	3.58	3.25	3.58
	(.87)	(.78)	(.98)	(.95)	(1.00)	(.73)	(.69)	(.83)	(.67)	(.67)	(.64)	(.76)	(.56)
Repeated grade (%)	11	9	14	17	45	11	9	21	11	10	8	22	13
	(.31)	(.28)	(.35)	(.37)	(.50)	(.31)	(.28)	(.41)	(.31)	(.30)	(.27)	(.42)	(.33)
Gifted / talented participant (%)	4	5	4	2	1	5	6	3	6	7	8	2	9
	(.20)	(.21)	(.19)	(.13)	(.08)	(.23)	(.23)	(.17)	(.24)	(.26)	(.27)	(.14)	(.29)
Resources for High-Achieving Students													
Gifted / talented program available (%)	52	50	47	75	31	50	51	42	58	52	53	41	52
	(.50)	(.50)	(.50)	.43)	(.46)	(.50)	(.50)	(.49)	(.50)	(.50)	(.50)	(.49)	(.50)
Teacher uses computers to challenge brightest students (%)	11	13	6	12	11	14	14	11	17	13	14	7	17
	(2.86)	(2.99)	(2.21)	(2.96)	(2.77)	(3.09)	(3.14)	(2.76)	(3.42)	(3.07)	(3.14)	(2.34)	(3.40)

Table 11. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Teacher's emphasis on student-centered, advanced-skills instruction (M)	.04 (.34)	.03 (.32)	.13 (.32)	.07 (.39)	-.17 (.45)	.02 (.32)	.00 (.31)	.09 (.34)	.07 (.36)	.02 (.32)	.02 (.31)	.10 (.37)	.05 (.35)
High-achieving classmates (M)	.26 (.76)	.35 (.70)	-.10 (.87)	.08 (.76)	.49 (.60)	.34 (.74)	.38 (.71)	-.03 (.78)	.30 (.89)	.43 (.74)	.45 (.73)	.08 (.67)	.40 (.91)
Characteristics of Teacher / Classrooms													
Master's degree or higher (%)	34 (.47)	34 (.48)	38 (.49)	34 (.47)	13 (.34)	35 (.48)	36 (.48)	40 (.49)	31 (.46)	36 (.48)	38 (.49)	38 (.49)	26 (.44)
Years of experience (M)	12.91 (8.27)	13.29 (8.22)	13.08 (8.19)	10.53 (7.01)	12.76 (10.75)	13.98 (8.87)	14.09 (8.67)	14.33 (9.10)	12.53 (9.08)	14.13 (8.80)	14.41 (8.68)	14.24 (8.90)	12.48 (8.79)
Years at this school (M)	8.36 (7.30)	8.81 (7.52)	8.29 (6.99)	5.93 (5.05)	9.70 (10.12)	8.78 (7.52)	9.16 (7.64)	8.54 (7.76)	7.07 (6.24)	8.93 (7.56)	9.35 (7.70)	9.05 (8.11)	6.88 (6.24)
Race of Teacher (%)													
White	88 (.33)	95 (.23)	63 (.48)	82 (.38)	97 (.00)	87 (.34)	94 (.23)	62 (.49)	72 (.45)	89 (.32)	95 (.22)	58 (.50)	78 (.42)
African American	9 (.29)	5 (.21)	33 (.47)	6 (.24)	2 (.15)	9 (.29)	5 (.21)	36 (.48)	17 (.38)	8 (.27)	4 (.08)	41 (.49)	17 (.37)
Latino	1 (.09)	.1 (.03)	1 (.10)	6 (.24)	1 (.07)	1 (.09)	.1 (.03)	.3 (.05)	8 (.28)	.4 (.06)	.1 (.03)	0 (.00)	4 (.20)
Asian	2 (.12)	0 (.07)	2 (.13)	4 (.20)	0 (.00)	2 (.15)	1 (.08)	.3 (.05)	1 (.11)	3 (.16)	1 (.08)	0 (.00)	1 (.09)
Native American	.1 (.03)	0 (.17)	.3 (.05)	.3 (.05)	0 (.00)	.2 (.05)	.1 (.03)	1 (.09)	1 (.09)	0 (0)	0 (.00)	0 (.00)	0 (.00)
Other	.3 (.06)	0 (.39)	1 (.11)	1 (.10)	0 (.00)	.4 (.06)	.1 (.04)	1 (.09)	1 (.10)	.1 (.03)	.1 (.03)	1 (.09)	0 (.00)
Class size (M)	24.66 (7.42)	25.01 (8.20)	23.17 (5.37)	25.04 (5.01)	21.27 (2.82)	24.39 (6.89)	25.54 (7.41)	22.72 (4.81)	25.06 (5.73)	24.58 (7.20)	24.84 (7.74)	22.50 (5.22)	24.24 (4.73)
Percent of class time devoted to academic interaction (M)	70.36 (12.71)	70.66 (12.37)	69.82 (14.47)	70.40 (11.39)	65.97 (16.82)	70.80 (12.95)	71.12 (12.84)	70.78 (13.89)	69.54 (12.59)	71.13 (12.88)	71.41 (12.90)	70.73 (13.69)	69.61 (11.80)

105

106

Table 11. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Resources													
Insufficient materials to meet students' needs (%)	15	13	30	21	8	16	14	30	15	13	13	20	13
	(.37)	(.34)	(.46)	(.40)	(.27)	(.36)	(.35)	(.46)	(.36)	(.34)	(.34)	(.40)	(.34)
Basic supplies never available or often not available (%)	6	7	17	4	3	8	8	14	6	7	8	9	3
	(.27)	(.25)	(.37)	(.20)	(.16)	(.28)	(.27)	(.35)	(.24)	(.26)	(.28)	(.28)	(.16)
Notebooks never available or often not available (%)	5	3	12	6	3	7	5	14	7	5	5	11	3
	(.22)	(.17)	(.32)	(.23)	(.16)	(.25)	(.22)	(.35)	(.25)	(.23)	(.22)	(.32)	(.16)
Pens/pencils never available or often not available (%)	10	8	8	23	4	13	12	29	9	11	11	23	7
	(.31)	(.27)	(.42)	(.27)	(.20)	(.34)	(.32)	(.45)	(.28)	(.32)	(.32)	(.42)	(.25)
Ditto master never available or often not available (%)	6	3	6	18	2	6	5	17	10	5	5	8	7
	(.24)	(.18)	(.39)	(.24)	(.14)	(.24)	(.21)	(.37)	(.30)	(.22)	(.21)	(.27)	(.25)
Photocopier never available or often not available (%)	14	11	24	21	2	12	11	26	15	11	11	19	13
	(.35)	(.32)	(.43)	(.41)	(.12)	(.33)	(.31)	(.44)	(.36)	(.32)	(.31)	(.40)	(.33)
Climate													
Student behavior interferes strongly or moderately agree (%)	16	14	32	9	13	18	15	37	19	16	15	39	15
	(.37)	(.35)	(.46)	(.28)	(.33)	(.38)	(.36)	(.48)	(.40)	(.37)	(.36)	(.49)	(.36)
Teachers seek new ideas strongly or moderately agree (%)	78	78	78	83	71	74	75	72	77	74	74	75	79
	(.41)	(.41)	(.42)	(.37)	(.46)	(.44)	(.42)	(.45)	(.42)	(.44)	(.44)	(.44)	(.41)
Teachers look forward to work strongly or moderately agree (%)	80	83	66	79	87	79	80	65	80	81	82	69	82
	(.40)	(.37)	(.47)	(.41)	(.33)	(.41)	(.40)	(.48)	(.40)	(.40)	(.38)	(.46)	(.39)
Parents involved in school programs strongly or moderately agree (%)	87	88	83	81	88	86	86	84	77	87	88	80	77
	(.34)	(.32)	(.37)	(.39)	(.33)	(.35)	(.34)	(.38)	(.43)	(.34)	(.33)	(.40)	(.42)

Table 12. School and Classroom Characteristics by Race and Baseline Reading Achievement, First-Grade Cohort

	All	White	Afric Amer	Latino	Nativ Amer	≥50 Read	White	Afric Amer	Latino	≥75 Read	White	Afric Amer	Latino
Characteristics of Peers													
Pct. White (*Mdn*)	85	90	45	34	71	82	89	33	24	84	89	32	20
	(29.95)	(18.52)	(32.99)	(29.86)	(23.16)	(30.1)	(20.75)	(29.38)	(31.34)	(29.66)	(21.02)	(30.28)	(36.25)
Pct. Free-lunch eligible (*Mdn*)	25	25	58	69	45	31	28	72	61	28	28	72	50
	(25.10)	(19.37)	(32.61)	(28.36)	(18.77)	(25.45)	(21.93)	(29.88)	(27.87)	(23.98)	(21.15)	(32.05)	(28.78)
Pct. <50th%ile Reading (*Mdn*)	26	25	38	40	40	30	26	45	41	26	25	49	30
	(18.59)	(15.52)	(21.30)	(22.69)	(15.19)	(17.83)	(15.68)	(20.37)	(21.49)	(16.97)	(15.63)	(20.00)	(21.63)
Pct. <25th%ile Reading (*Mdn*)	12	12	12	20	25	12	11	13	20	11	11	12	12
	(11.08)	(9.29)	(14.73)	(14.51)	(8.38)	(11.01)	(9.62)	(16.85)	(12.72)	(10.60)	(9.76)	(16.34)	(12.27)
Pct. <50th%ile Math (*Mdn*)	25	25	31	28	30	25	25	37	30	25	25	40	25
	(17.72)	(15.31)	(18.13)	(22.99)	(17.74)	(17.10)	(15.17)	(19.43)	(21.51)	(16.20)	(15.26)	(18.19)	(19.07)
Pct. <25th%ile Math (*Mdn*)	10	10	13	10	25	10	10	15	15	10	10	13	10
	(10.23)	(8.52)	(12.91)	(14.19)	(10.12)	(10.05)	(8.63)	(15.59)	(12.08)	(9.44)	(8.65)	(14.71)	(10.23)
Individual Characteristics													
Math GPA (*M*)	3.36	3.47	3.05	3.05	3.19	3.60	3.64	3.45	3.65	3.76	3.78	3.68	3.78
	(.81)	(.75)	(.89)	(.79)	(.87)	(.63)	(.61)	(.72)	(.56)	(.49)	(.49)	(.52)	(.43)
Reading GPA (*M*)	3.17	3.31	2.72	2.99	2.88	3.47	3.52	3.27	3.55	3.71	3.74	3.59	3.63
	(.87)	(.78)	(.99)	(.95)	(1.00)	(.70)	(.67)	(.82)	(.60)	(.54)	(.53)	(.63)	(.53)
Repeated grade (%)	11	9	14	17	45	10	8	19	9	9	7	15	12
	(.31)	(.28)	(.35)	(.37)	(.50)	(.29)	(.27)	(.39)	(.28)	(.28)	(.26)	(.36)	(.32)
Gifted / talented participant (%)	4	5	4	2	1	6	6	3	8	9	9	6	15
	(.20)	(.21)	(.19)	(.13)	(.08)	(.23)	(.23)	(.18)	(.27)	(.29)	(.29)	(.24)	(.35)
Resources for High-Achieving Students													
Gifted / talented program available (%)	52	50	47	75	31	49	50	41	57	54	54	40	72
	(.50)	(.50)	(.50)	(.43)	(.46)	(.50)	(.50)	(.49)	(.50)	(.50)	(.50)	(.49)	(.45)
Teacher uses computers to challenge brightest students (%)	11	12	6	15	11	13	14	9	13	11	11	3	14
	(2.87)	(2.96)	(2.21)	(3.18)	(2.85)	(3.05)	(3.10)	(2.53)	(3.08)	(2.77)	(2.78)	(1.51)	(3.17)

Table 12. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Teacher's emphasis on student-centered, advanced-skills instruction (*M*)	.04 (.32)	.03 (.33)	.09 (.31)	.06 (.30)	.07 (.32)	.05 (.32)	.04 (.32)	.08 (.39)	.10 (.28)	.08 (.32)	.06 (.32)	.13 (.37)	.15 (.27)
High-achieving classmates (*M*)	.29 (.77)	.41 (.73)	-.17 (.71)	.03 (.86)	.60 (.67)	.40 (.77)	.46 (.74)	-.08 (.81)	.23 (.74)	.55 (.81)	.59 (.77)	.15 (.89)	.48 (.80)
Characteristics of Teacher / Classrooms													
Master's degree or higher (%)	35 (.48)	36 (.48)	36 (.48)	36 (.48)	14 (.34)	37 (.48)	40 (.49)	40 (.49)	22 (.42)	37 (.48)	39 (.49)	43 (.49)	22 (.42)
Years of experience (*M*)	13.03 (8.34)	13.51 (8.33)	12.82 (8.13)	10.53 (6.98)	13.11 (10.83)	13.77 (8.89)	13.97 (8.72)	14.15 (9.19)	11.17 (8.61)	13.64 (9.01)	13.78 (8.89)	14.51 (9.76)	11.57 (7.86)
Years at this school (*M*)	8.51 (7.35)	9.01 (7.57)	8.33 (7.03)	5.89 (5.02)	9.80 (10.12)	8.76 (7.60)	9.11 (7.63)	8.49 (8.14)	6.39 (6.01)	8.72 (7.75)	9.06 (7.78)	8.69 (8.90)	6.38 (5.28)
Race of Teacher (%)													
White	88 (.32)	95 (.22)	62 (.48)	83 (.37)	97 (.17)	88 (.32)	94 (.23)	63 (.48)	80 (.40)	89 (.32)	94 (.23)	65 (.48)	83 (.38)
African American	9 (.29)	4 (.21)	33 (.47)	8 (.27)	2 (.15)	9 (.28)	5 (.21)	35 (.48)	14 (.15)	7 (.26)	5 (.21)	34 (.48)	15 (.35)
Latino	1 (.08)	.1 (.02)	1 (.10)	4 (.21)	1 (.06)	.2 (.05)	.1 (.03)	0 (.00)	2 (.14)	.1 (.03)	0 (.00)	0 (.00)	1 (.11)
Asian	1 (.12)	1 (.07)	2 (.13)	3 (.18)	0 (.00)	2 (.15)	1 (.09)	1 (.08)	1 (.12)	4 (.19)	1 (.11)	1 (.11)	1 (.11)
Native American	.1 (.03)	0 (.02)	.3 (.05)	.3 (.06)	0 (.00)	.4 (.06)	.2 (.04)	1 (.10)	2 (.15)	0 (.00)	0 (.00)	0 (.00)	0 (.00)
Other	.3 (.06)	0 (.02)	1 (.11)	1 (.10)	0 (.00)	.1 (.04)	0 (.02)	1 (.08)	0 (.00)	.1 (.03)	.1 (.03)	0 (.000)	0 (.00)
Class size (*M*)	24.97 (7.95)	25.42 (8.85)	25.12 (5.65)	24.92 (4.73)	21.43 (3.03)	24.78 (7.99)	25.13 (8.67)	22.72 (4.95)	23.97 (4.97)	25.18 (8.42)	25.44 (9.00)	23.14 (6.10)	23.36 (4.70)
Percent of class time devoted to academic interaction (*M*)	70.32 (12.63)	70.58 (12.27)	69.60 (14.57)	70.39 (11.12)	65.85 (16.90)	71.11 (12.97)	71.27 (12.80)	70.99 (14.78)	71.29 (10.79)	71.09 (12.26)	71.31 (12.32)	72.28 (12.49)	71.60 (9.45)

Table 12. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Resources													
Insufficient materials to meet students' needs (%)	17 (.38)	14 (.35)	29 (.45)	21 (.41)	8 (.27)	17 (.38)	16 (.36)	33 (.47)	13 (.34)	18 (.38)	17 (.37)	33 (.47)	16 (.37)
Basic supplies never available or often not available (%)	8 (.27)	7 (.25)	17 (.37)	4 (.20)	3 (.16)	9 (.29)	9 (.29)	15 (.35)	5 (.23)	8 (.28)	9 (.28)	17 (.37)	3 (.16)
Notebooks never available or often not available (%)	5 (.22)	3 (.18)	12 (.33)	6 (.24)	3 (.16)	7 (.26)	6 (.24)	16 (.36)	9 (.29)	7 (.26)	7 (.25)	18 (.38)	3 (.16)
Pens/pencils never available or often not available (%)	10 (.30)	8 (.28)	21 (.40)	7 (.26)	4 (.19)	14 (.35)	13 (.33)	30 (.46)	9 (.29)	12 (.32)	11 (.31)	34 (.48)	8 (.27)
Ditto master never available or often not available (%)	6 (.23)	4 (.18)	17 (.37)	7 (.25)	2 (.15)	7 (.26)	6 (.23)	18 (.39)	10 (.31)	6 (.24)	5 (.21)	22 (.41)	9 (.29)
Photocopier never available or often not available (%)	14 (.34)	11 (.31)	23 (.42)	20 (.40)	2 (.15)	13 (.34)	11 (.32)	27 (.45)	14 (.35)	13 (.33)	11 (.32)	30 (.46)	15 (.35)
Climate													
Student behavior interferes strongly or moderately agree (%)	16 (.37)	14 (.35)	30 (.46)	10 (.29)	13 (.33)	17 (.38)	15 (.36)	36 (.48)	18 (.39)	15 (.35)	13 (.34)	34 (.48)	12 (.33)
Teachers seek new ideas strongly or moderately agree (%)	78 (.41)	78 (.41)	78 (.41)	83 (.37)	71 (.45)	74 (.44)	75 (.43)	69 (.46)	80 (.40)	72 (.45)	73 (.45)	66 (.47)	74 (.44)
Teachers look forward to work strongly or moderately agree (%)	81 (.40)	84 (.37)	70 (.47)	79 (.40)	87 (.33)	78 (.41)	80 (.40)	63 (.48)	77 (.42)	79 (.41)	80 (.40)	66 (.48)	88 (.33)
Parents involved in school programs strongly or moderately agree (%)	87 (.34)	88 (.32)	83 (.37)	81 (.39)	88 (.33)	86 (.34)	87 (.34)	86 (.35)	76 (.43)	87 (.33)	87 (.33)	89 (.31)	70 (.46)

Table 13. School and Classroom Characteristics by Race and Baseline Math Achievement, Third-Grade Cohort

	All	White	Afric Amer	Latino	Nativ Amer	≥50 Math	White	Afric Amer	Latino	≥75 Math	White	Afric Amer	Latino
Characteristics of Peers													
Pct. White (*Mdn*)	85	92	46	34	39	79	90	30	24	84	93	34	27
	(29.50)	(17.06)	(33.37)	(29.84)	(24.49)	(33.10)	(20.73)	(30.43)	(25.57)	(32.29)	(20.93)	(31.54)	(25.48)
Pct. Free-lunch eligible (*Mdn*)	25	22	53	69	54	35	25	75	61	25	21	70	69
	(25.08)	(19.26)	(32.26)	(26.75)	(14.83)	(26.39)	(21.69)	(28.81)	(22.23)	(25.33)	(21.28)	(29.53)	(22.72)
Pct. <50th%ile Reading (*Mdn*)	25	25	38	44	57	30	27	44	52	30	25	38	48
	(18.89)	(15.37)	(20.34)	(23.33)	(11.23)	(19.96)	(16.85)	(20.58)	(20.80)	(19.06)	(16.88)	(19.65)	(20.97)
Pct. <25th%ile Reading (*Mdn*)	12	11	12	25	19	13	10	13	25	11	10	12	23
	(12.65)	(10.19)	(14.77)	(19.29)	(5.22)	(12.97)	(10.22)	(17.66)	(15.76)	(12.07)	(10.24)	(14.49)	(16.03)
Pct. <50th%ile Math (*Mdn*)	25	23	30	40	57	25	23	38	41	25	20	28	35
	(18.12)	(14.90)	(18.63)	(22.20)	(17.01)	(18.73)	(16.08)	(19.47)	(18.86)	(17.69)	(15.79)	(18.44)	(18.91)
Pct. <25th%ile Math (*Mdn*)	10	10	13	18	30	10	10	15	20	10	10	15	18
	(11.39)	(8.95)	(13.08)	(18.42)	(10.10)	(11.39)	(8.57)	(15.32)	(15.36)	(10.57)	(8.65)	(11.70)	(15.80)
Individual Characteristics													
GPA (*M*)	3.22	3.35	2.74	2.98	3.34	3.51	3.59	3.29	3.33	3.70	3.75	3.55	3.58
	(.75)	(.67)	(.79)	(.81)	(.71)	(.57)	(.53)	(.63)	(.64)	(.47)	(.44)	(.53)	(.50)
Repeated grade (%)	11	9	22	14	3	7	6	15	8	3	3	8	2
	(.31)	(.28)	(.41)	(.35)	(.17)	(.26)	(.23)	(.36)	(.27)	(.18)	(.17)	(.28)	(.13)
Gifted / talented participant (%)	10	11	8	5	1	14	14	12	11	21	21	19	19
	(.30)	(.32)	(.27)	(.22)	(.11)	(.35)	(.35)	(.32)	(.32)	(.41)	(.41)	(.40)	(.39)
Resources for High-Achieving Students													
Gifted / talented program available (%)	27	27	28	26	63	25	24	34	21	23	23	33	19
	(.44)	(.44)	(.45)	(.44)	(.48)	(.43)	(.43)	(.47)	(.41)	(.42)	(.42)	(.47)	(.39)
Teacher uses computers to challenge brightest students (%)	15	16	13	21	4	15	15	17	15	14	14	21	18
	(3.24)	(3.26)	(3.04)	(3.69)	(1.69)	(3.17)	(3.19)	(3.42)	(3.20)	(3.16)	(3.09)	(3.68)	(3.50)
Teacher's emphasis on student-centered, advanced-skills instruction (*M*)	.02	.01	.04	.03	.12	.05	.01	.13	.12	.06	.02	.17	.14
	(.33)	(.32)	(.37)	(.39)	(.37)	(.32)	(.31)	(.34)	(.35)	(.32)	(.31)	(.31)	(.34)
High-achieving classmates (*M*)	.22	.30	-.08	-.12	-.11	.32	.37	.08	.06	.51	.49	.34	.27
	(.76)	(.70)	(.82)	(.54)	(.99)	(.77)	(.72)	(.81)	(.65)	(.85)	(.78)	(.92)	(.74)

Table 13. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Characteristics of Teacher / Classrooms													
Master's degree or higher (%)	37	35	42	31	65	38	35	42	37	39	35	40	40
	(.48)	(.48)	(.49)	(.46)	(.48)	(.49)	(.48)	(.49)	(.48)	(.49)	(.48)	(.49)	(.49)
Years of experience (*M*)	14.83	15.35	13.48	12.79	15.58	14.85	15.17	14.07	14.02	15.43	15.67	13.52	15.62
	(8.89)	(8.85)	(8.46)	(8.80)	(8.71)	(9.06)	(9.05)	(8.22)	(9.21)	(9.11)	(9.11)	(8.17)	(9.33)
Years at this school (*M*)	9.44	10.04	8.36	7.05	11.80	9.26	9.85	8.32	7.65	9.72	10.19	7.88	8.79
	(7.66)	(7.80)	(7.03)	(6.95)	(8.22)	(7.43)	(7.67)	(6.60)	(6.43)	(7.45)	(7.60)	(6.28)	(6.90)
Race of Teacher (%)													
White	88	94	66	80	81	86	94	63	74	87	94	63	73
	(.33)	(.23)	(.47)	(.40)	(.39)	(.35)	(.24)	(.48)	(.44)	(.34)	(.24)	(.48)	(.46)
African American	7	4	26	7	0	7	4	30	7	6	4	31	4
	(.25)	(.19)	(.44)	(.25)	(.00)	(.26)	(.20)	(.46)	(.26)	(.24)	(.20)	(.46)	(.21)
Latino	2	1	1	11	.3	3	1	1	16	3	1	2	18
	(.14)	(.11)	(.11)	(.31)	(.05)	(.16)	(.09)	(.08)	(.37)	(.16)	(.09)	(.13)	(.39)
Asian	1	.1	.3	2	0	3	.4	.3	2	3	1	0	4
	(.12)	(.03)	(.05)	(.13)	(.00)	(.16)	(.06)	(.06)	(.15)	(.18)	(.07)	(.00)	(.19)
Native American	1	1	1	.2	19	1	1	1	.3	1	1	1	1
	(.10)	(.08)	(.11)	(.04)	(.39)	(.09)	(.09)	(.08)	(.05)	(.09)	(.08)	(.09)	(.09)
Other	1	.1	6	.1	0	1	.1	5	.3	.4	.1	3	0
	(.10)	(.03)	(.23)	(.03)	(.00)	(.09)	(.03)	(.21)	(.05)	(.06)	(.03)	(.18)	(.00)
Class size (*M*)	25.46	25.48	26.20	24.82	22.01	25.27	25.38	25.38	24.67	25.41	25.60	24.05	25.56
	(5.91)	(6.22)	(5.90)	(3.50)	(2.65)	(4.67)	(4.52)	(8.51)	(3.50)	(4.16)	(4.03)	(7.73)	(2.83)
Percent of class time devoted to academic interaction (*M*)	70.29	70.13	69.84	70.31	75.38	70.67	70.51	71.17	71.80	71.26	71.12	71.63	73.37
	(14.06)	(13.82)	(15.50)	(13.40)	(13.45)	(13.45)	(13.27)	(14.54)	(12.98)	(12.87)	(12.62)	(14.13)	(13.61)

117

118

Table 13. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Resources													
Insufficient materials to meet students' needs (%)	21	17	45	25	8	26	23	51	23	23	20	56	21
	(.41)	(.37)	(.50)	(.44)	(.28)	(.44)	(.42)	(.50)	(.42)	(.42)	(.40)	(.50)	(.41)
Basic supplies never available or often not available (%)	11	9	25	9	15	12	11	27	9	11	10	29	8
	(.31)	(.29)	(.43)	(.29)	(.35)	(.32)	(.31)	(.44)	(.28)	(.31)	(.31)	(.45)	(.27)
Notebooks never available or often not available (%)	7	5	20	9	8	7	7	17	7	6	6	13	6
	(.26)	(.21)	(.40)	(.28)	(.27)	(.26)	(.25)	(.37)	(.26)	(.24)	(.23)	(.34)	(.23)
Pens/pencils never available or often not available (%)	8	6	20	8	10	8	7	17	9	7	7	12	9
	(.27)	(.24)	(.40)	(.28)	(.29)	(.27)	(.26)	(.37)	(.28)	(.25)	(.25)	(.32)	(.28)
Ditto master never available or often not available (%)	7	4	20	12	2	7	5	21	10	5	4	19	10
	(.25)	(.20)	(.40)	(.32)	(.15)	(.26)	(.22)	(.41)	(.30)	(.23)	(.20)	(.39)	(.30)
Photocopier never available or often not available (%)	16	13	29	17	3	18	16	40	17	16	15	42	16
	(.37)	(.34)	(.48)	(.38)	(.29)	(.38)	(.37)	(.49)	(.37)	(.37)	(.35)	(.50)	(.37)
Climate													
Student behavior interferes strongly or moderately agree (%)	15	13	29	17	3	17	14	40	20	15	12	41	16
	(.36)	(.34)	(.45)	(.38)	(.17)	(.38)	(.35)	(.49)	(.40)	(.35)	(.33)	(.49)	(.37)
Teachers seek new ideas strongly or moderately agree (%)	75	77	70	72	72	69	72	60	71	70	73	58	69
	(.44)	(.42)	(.46)	(.45)	(.45)	(.46)	(.45)	(.49)	(.45)	(.46)	(.45)	(.50)	(.46)
Teachers look forward to work strongly or moderately agree (%)	74	76	66	69	73	75	76	70	72	76	77	67	70
	(.44)	(.43)	(.47)	(.44)	(.47)	(.43)	(.43)	(.46)	(.45)	(.43)	(.42)	(.47)	(.46)
Parents involved in school programs strongly or moderately agree (%)	91	92	86	84	97	89	89	89	87	90	90	93	87
	(.29)	(.27)	(.35)	(.37)	(.17)	(.31)	(.31)	(.31)	(.34)	(.29)	(.30)	(.26)	(.33)

Table 14. School and Classroom Characteristics by Race and Baseline Reading Achievement, Third-Grade Cohort

	All	White	Afric Amer	Latino	Nativ Amer	≥50 Read	White	Afric Amer	Latino	≥75 Read	White	Afric Amer	Latino
Characteristics of Peers													
Pct. White (*Mdn*)	85	92	46	34	39	82	92	33	32	87	94	20	34
	(29.50)	(17.06)	(33.37)	(29.84)	(24.49)	(31.27)	(20.47)	(29.66)	(27.44)	(30.08)	(20.03)	(29.97)	(27.38)
Pct. Free-lunch eligible (*Mdn*)	25	22	53	69	54	30	25	74	61	25	22	72	61
	(25.08)	(19.26)	(32.26)	(26.75)	(14.83)	(25.58)	(21.50)	(29.49)	(24.11)	(23.51)	(20.10)	(31.30)	(24.73)
Pct. <50th%ile Reading (*Mdn*)	25	25	38	44	57	30	26	40	48	30	25	38	48
	(18.89)	(15.37)	(20.34)	(23.33)	(11.23)	(18.71)	(16.33)	(18.91)	(20.39)	(17.25)	(15.26)	(19.23)	(20.69)
Pct. <25th%ile Reading (*Mdn*)	12	11	12	25	19	12	11	13	25	10	11	12	25
	(12.65)	(10.19)	(14.77)	(19.29)	(6.22)	(12.24)	(10.02)	(15.59)	(15.82)	(10.89)	(9.57)	(13.44)	(15.33)
Pct. <50th%ile Math (*Mdn*)	25	23	30	40	57	25	23	30	35	24	20	28	35
	(18.12)	(14.90)	(18.63)	(22.20)	(17.01)	(17.88)	(15.67)	(18.45)	(19.37)	(16.34)	(14.53)	(18.39)	(19.30)
Pct. <25th%ile Math (*Mdn*)	10	10	13	18	30	10	10	15	20	10	10	15	19
	(11.39)	(8.95)	(13.08)	(18.42)	(10.10)	(10.85)	(8.45)	(13.38)	(15.74)	(9.86)	(8.17)	(12.04)	(15.65)
Individual Characteristics													
GPA (*M*)	3.23	3.36	2.75	2.99	3.32	3.51	3.56	3.29	3.39	3.71	3.74	3.42	3.63
	(.74)	(.67)	(.79)	(.80)	(.73)	(.58)	(.56)	(.61)	(.62)	(.45)	(.43)	(.51)	(.50)
Repeated grade (%)	11	9	22	14	3	6	5	11	6	3	3	4	2
	(.31)	(.28)	(.41)	(.35)	(.17)	(.24)	(.23)	(.31)	(.24)	(.17)	(.17)	(.21)	(.15)
Gifted / talented participant (%)	10	11	8	5	1	15	14	13	13	21	21	21	20
	(.30)	(.32)	(.27)	(.22)	(.11)	(.35)	(.35)	(.34)	(.34)	(.41)	(.41)	(.41)	(.40)
Resources for High-Achieving Students													
Gifted / talented program available (%)	73	73	72	74	57	74	74	67	77	73	73	65	77
	(.44)	(.44)	(.45)	(.44)	(.48)	(.44)	(.44)	(.47)	(.42)	(.44)	(.44)	(.48)	(.42)
Teacher uses computers to challenge brightest students (%)	15	15	13	22	4	15	15	21	15	15	14	16	19
	(3.18)	(3.18)	(3.04)	(3.73)	(1.68)	(3.21)	(3.17)	(3.65)	(3.18)	(3.17)	(3.15)	(3.32)	(3.55)
Teacher's emphasis on student-centered, advanced-skills instruction (*M*)	.03	.02	.05	.08	-.09	.05	.02	.10	.13	.06	.04	.13	.18
	(.35)	(.35)	(.39)	(.33)	(.37)	(.32)	(.31)	(.36)	(.29)	(.31)	(.31)	(.37)	(.23)
High-achieving classmates (*M*)	.27	.40	-.19	-.13	-.19	.36	.45	.07	.03	.56	.61	.26	.28
	(.76)	(.71)	(.78)	(.67)	(.66)	(.76)	(.75)	(.74)	(.65)	(.82)	(.80)	(.87)	(.68)

Table 14. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Characteristics of Teacher / Classrooms													
Master's degree or higher (%)	37 (.48)	35 (.48)	43 (.49)	30 (.46)	65 (.48)	38 (.49)	36 (.48)	48 (.50)	36 (.48)	39 (.49)	36 (.48)	49 (.50)	40 (.49)
Years of experience (*M*)	14.70 (8.86)	15.12 (8.82)	13.52 (8.47)	12.68 (8.82)	15.37 (8.96)	14.98 (8.88)	15.32 (8.91)	14.23 (8.19)	13.73 (8.59)	15.40 (8.74)	15.48 (8.74)	14.52 (7.67)	14.75 (8.55)
Years at this school (*M*)	9.24 (7.59)	9.70 (7.72)	8.70 (7.11)	7.02 (6.94)	12.11 (8.59)	9.49 (7.55)	9.87 (7.74)	9.00 (6.81)	8.07 (6.68)	9.95 (7.66)	10.21 (7.80)	8.89 (6.11)	8.45 (6.67)
Race of Teacher (%)													
White	88 (.33)	94 (.23)	65 (.48)	80 (.40)	81 (.40)	87 (.34)	94 (.24)	61 (.49)	76 (.43)	89 (.32)	94 (.23)	62 (.49)	77 (.43)
African American	7 (.25)	4 (.19)	28 (.45)	7 (.26)	0 (.00)	8 (.27)	5 (.21)	36 (.48)	7 (.25)	7 (.25)	4 (.20)	37 (.49)	5 (.22)
Latino	2 (.14)	1 (.11)	1 (.11)	10 (.30)	.3 (.39)	2 (.15)	1 (.08)	1 (.08)	15 (.36)	2 (.13)	1 (.08)	0 (.00)	15 (.36)
Asian	1 (.12)	.1 (.04)	.3 (.05)	2 (.13)	0 (.00)	2 (.15)	.3 (.05)	1 (.10)	2 (.12)	3 (.16)	.4 .07)	0 (.00)	2 (.14)
Native American	1 (.10)	1 (.08)	1 (.10)	.2 (.04)	19 (.39)	1 (.08)	1 (.07)	1 (.08)	.3 (.06)	1 (.07)	.4 (.06)	1 (.10)	1 (.10)
Other	1 (.08)	.1 (.02)	4 (.21)	1 (.07)	0 (.00)	.2 (.04)	0 (.00)	1 (.10)	0 (.00)	0 (.00)	0 (.00)	0 (.00)	0 (.00)
Class size (*M*)	24.94 (6.86)	24.95 (6.94)	25.93 (5.99)	24.60 (6.08)	22.64 (3.02)	25.31 (5.57)	25.37 (5.32)	27.30 (9.43)	24.71 (4.35)	25.29 (5.60)	25.43 (5.14)	28.46 (9.38)	23.63 (5.57)
Percent of class time devoted to academic interaction (*M*)	70.69 (12.89)	70.64 (12.52)	70.36 (14.23)	70.02 (13.23)	75.59 (13.29)	70.81 (13.20)	70.82 (12.75)	71.15 (14.99)	70.70 (14.03)	71.31 (12.86)	71.37 (12.34)	70.68 (15.76)	72.50 (15.23)

Table 14. (cont.)

	All	White	Afric Amer	Latino	Nativ Amer	≥50% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Resources													
Insufficient materials to meet students' needs (%)	21 (.41)	17 (.37)	44 (.50)	27 (.45)	8 (.26)	25 (.43)	22 (.42)	48 (.50)	24 (.43)	23 (.42)	22 (.41)	56 (.50)	15 (.36)
Basic supplies never available or often not available (%)	12 (.33)	11 (.31)	23 (.42)	9 (.29)	10 (.30)	12 (.33)	12 (.33)	22 (.42)	9 (.29)	13 (.34)	13 (.34)	29 (.45)	5 (.22)
Notebooks never available or often not available (%)	9 (.33)	7 (.25)	19 (.40)	9 (.29)	8 (.27)	7 (.28)	8 (.27)	18 (.39)	7 (.25)	9 (.28)	8 (.28)	22 (.42)	5 (.22)
Pens/pencils never available or often not available (%)	11 (.31)	10 (.30)	18 (.39)	9 (.29)	4 (.21)	10 (.30)	10 (.30)	15 (.36)	9 (.29)	10 (.31)	11 (.31)	15 (.36)	8 (.27)
Ditto master never available or often not available (%)	6 (.24)	4 (.20)	17 (.38)	11 (.32)	2 (.15)	7 (.26)	5 (.22)	16 (.36)	10 (.31)	5 (.22)	5 (.21)	15 (.36)	3 (.17)
Photocopier never available or often not available (%)	16 (.36)	13 (.34)	32 (.47)	18 (.38)	5 (.21)	18 (.39)	17 (.38)	34 (.47)	16 (.37)	18 (.38)	18 (.38)	39 (.49)	9 (.29)
Climate													
Student behavior interferes strongly or moderately agree (%)	15 (.36)	13 (.33)	29 (.45)	17 (.37)	3 (.17)	18 (.38)	15 (.36)	39 (.49)	19 (.39)	15 (.36)	13 (.33)	50 (.50)	15 (.36)
Teachers seek new ideas strongly or moderately agree (%)	75 (.43)	77 (.42)	70 (.46)	74 (.44)	70 (.46)	71 (.46)	72 (.45)	63 (.48)	74 (.44)	70 (.46)	71 (.45)	55 (.50)	69 (.46)
Teachers look forward to work strongly or moderately agree (%)	76 (.43)	78 (.41)	68 (.47)	69 (.46)	73 (.45)	76 (.43)	77 (.42)	68 (.47)	72 (.45)	76 (.43)	77 (.42)	63 (.48)	71 (.46)
Parents involved in school programs strongly or moderately agree (%)	91 (.29)	92 (.27)	86 (.35)	84 (.37)	97 (.17)	89 (.31)	89 (.31)	86 (.35)	88 (.32)	90 (.30)	90 (.30)	85 (.35)	87 (.34)

125

126

In addition to the differences between minority and White students within the total sample, these tables provide useful comparisons between minority and White students from the subsamples of high achievers. To facilitate comparisons of the White-minority differences within the total sample to the differences within the high-achieving subsamples, we provide standard deviations in parentheses under each summary measure. Based on the standard deviations, we computed standardized differences between the characteristics reported for White students and those reported for both African American and Latino students within the total sample and within each high-achievement subsample. We calculated raw score differences between variables, such as the average White student's class size and the average African American student's class size, and divided these differences by the total standard deviation of the respective group. Racial differences within each high-achievement group were then compared to differences found in the total sample. In making these comparisons, we assess whether, and to what extent, the classrooms and schools attended by high-achieving White and African American students were more alike than those attended by White and African American students in the overall sample.

In many instances, the White-minority differences in the school and classroom characteristics for the total sample that might explain the achievement gap (i.e., attending impoverished, segregated, and/or low-achieving schools with insufficient materials to meet student needs) existed in the high-achieving subsamples as well. At times, the White-minority differences within the high-achieving subsample were even more dramatic than those found for the total sample. For example, in the third-grade total sample, schools attended by African American students had a higher percentage of economically disadvantaged students than the schools attended by White students, which represented a difference of 1.24 *SD*s. For African

American students achieving at or above the 75th percentile in reading, this difference increased to 2.46 *SD*s. In the first-grade-cohort total sample, White students were more likely than Latino students to attend an integrated school with a standardized difference of 1.87 *SD*s. Among students achieving at or above the 75th percentile in reading that difference increased to 2.32 *SD*s.

A couple of comparisons may shed light as to why the minority students were able to achieve at high levels despite the adverse conditions they experienced. While a number of gaps found between White and minority students in the total sample remained the same or increased in the high-achieving subsamples, a few did decrease. For instance, although White students were more likely than minority students to attend classes with high-achieving peers, this gap decreased across cohort for high-achieving minorities. For example, in the first-grade cohort, the White-African American gap decreased from .75 *SD*s in the total sample to .54 *SD*s in the subsample of high achievers at or above the 75th percentile. In other words, with respect to the achievement levels of their peers, high-achieving White and African American students attended classrooms that were more alike than those attended by White and African American students in the overall sample. In the third-grade cohort a gap favoring minority students was found for teachers' degree of focus on using student-centered, advanced skills instruction. In both the total and high-achieving samples, African American students were enrolled in classrooms with a stronger focus on this type of instruction. This advantage increased from .09 *SD*s in the total sample to .47 *SD*s in the sample of students achieving at or above the 75th percentile. In other words, in comparison to high-achieving White students' classrooms, the emphasis on student-centered, advanced-skills oriented instruction was nearly a half of one standard deviation greater within high-achieving African American students' classrooms

Tables 15 through 18 directly compare the individual, classroom, and school characteristics of subsamples of high- ($\geq 75^{th}$ percentile) and low-achieving ($\leq 25^{th}$ percentile) students. Within-race standardized differences were obtained by subtracting the results for high-achieving students from the results for low-achieving students and dividing by the standard deviation for all students at or below the 25^{th} percentile.

Although some results varied by cohort and by subject, the comparisons of school, classroom, and individual variables revealed many important and consistent differences. High-achieving minority students were more likely to attend schools that were more integrated and less impoverished than their low-achieving counterparts. For the third-grade cohort, African American students achieving highly in math and Latino students achieving highly in reading attended schools that were more integrated. In the first-grade cohort, relative to low achievers, the percentage of White students in the school increased among high achievers by .76 *SD*s for African American students and by .65 *SD*s for Latino students. Across both cohorts and subject areas, high-achieving African American students attended less impoverished schools than their low-achieving peers. For the first- and third-grade cohorts, the differences were equal to about a half of one standard deviation (.49 and .57 *SD*s, for first and third grade respectively). This was the case for both subjects for the first-grade cohort and among Latino students performing highly in reading only for the third-grade cohort. In the first-grade cohort, for both subject areas, high-achieving Latino students attended schools that were comprised of a lower percentage of students performing below the 50^{th} and 25^{th} percentiles in reading or math. This finding also applied, across subjects and race, to the third-grade cohort.

Table 15. School and Classroom Characteristics by Race and Baseline Math Achievement, First-Grade Cohort

	≤25% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Characteristics of Peers								
Pct. White (*Mdn*)	45	87	13	11	84	89	33	20
	(36.30)	(24.47)	(28.60)	(21.00)	(30.29)	(20.58)	(31.27)	(32.85)
Pct. Free-lunch eligible (*Mdn*)	68	43	89	75	31	28	73	61
	(28.32)	(24.44)	(24.72)	(19.16)	(24.18)	(20.76)	(28.89)	(27.61)
Pct. <50th%ile Reading (*Mdn*)	44	33	50	61	27	26	49	41
	(22.04)	(18.74)	(21.68)	(21.11)	(17.23)	(15.41)	(20.40)	(21.79)
Pct. <25th%ile Reading (*Mdn*)	20	15	20	20	11	11	13	20
	(15.30)	(11.45)	(18.96)	(15.03)	(10.14)	(9.43)	(14.70)	(11.94)
Pct. <50th%ile Math (*Mdn*)	35	30	46	54	25	25	41	33
	(21.10)	(19.21)	(19.69)	(20.92)	(16.53)	(14.90)	(19.39)	(21.13)
Pct. <25th%ile Math (*Mdn*)	15	11	15	18	10	10	15	15
	(13.82)	(10.5)	(17.58)	(12.33)	(9.30)	(8.75)	(12.88)	(9.76)
Resources for High-Achieving Students								
Gifted / talented program available (%)	55	52	60	49	52	53	41	52
	(.50)	(.50)	(.49)	(.50)	(.50)	(.50)	(.49)	(.50)
Teacher uses computers to challenge brightest students (%)	12	15	7	12	13	14	7	17
	(2.90)	(3.26)	(2.28)	(2.92)	(3.07)	(3.14)	(2.34)	(3.40)
Teacher's emphasis on student-centered, advanced-skills instruction (*M*)	.09	-.06	.08	.02	.02	.02	.10	.05
	(.33)	(.31)	(.32)	(.37)	(.32)	(.31)	(.37)	(.35)
High-achieving classmates (*M*)	-.33	-.07	-.57	-.47	.43	.45	.08	.40
	(.70)	(.62)	(.67)	(.72)	(.74)	(.73)	(.67)	(.91)
Characteristics of Teacher / Classrooms								
Master's degree or higher (%)	37	37	39	36	36	38	38	26
	(.48)	(.48)	(.49)	(.48)	(.48)	(.49)	(.49)	(.44)
Years of experience (*M*)	13.54	13.62	13.77	13.34	14.13	14.41	14.24	12.48
	(8.95)	(8.52)	(9.35)	(8.60)	(8.80)	(8.68)	(8.90)	(8.79)
Years at this school (*M*)	8.36	8.82	8.80	7.20	8.93	9.35	9.05	6.88
	(7.45)	(7.47)	(8.04)	(6.20)	(7.56)	(7.70)	(8.11)	(6.24)

Table 15. (cont.)

	≤25% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Race of Teacher (%)								
White	72	93	53	63	89	95	58	78
	(.45)	(.26)	(.50)	(.48)	(.32)	(.22)	(.50)	(.42)
African American	19	4	41	13	8	4	41	17
	(.16)	(.19)	(.49)	(.33)	(.27)	(.08)	(.49)	(.37)
Latino	5	1	3	16	.4	.1	0	4
	(.21)	(.10)	(.16)	(.37)	(.06)	(.03)	(.00)	(.20)
Asian	3	1	1	5	3	1	0	1
	(.16)	(.09)	(.11)	(.21)	(.16)	(.08)	(.00)	(.09)
Native American	.4	.1	1	.3	0	0	0	0
	(.06)	(.04)	(.09)	(.06)	(0)	(.00)	(.00)	(.00)
Other	2	1	2	3	.1	.1	1	0
	(.14)	(.12)	(.13)	(.18)	(.03)	(.03)	(.09)	(.00)
Class size (*M*)	23.86	24.21	22.33	25.64	24.58	24.84	22.50	24.24
	(6.15)	(7.27)	(4.48)	(6.01)	(7.20)	(7.74)	(5.22)	(4.73)
Percent of class time devoted to academic interaction (*M*)	69.93	69.96	70.31	70.12	71.13	71.41	70.73	69.61
	(14.18)	(12.48)	(15.56)	(14.78)	(12.88)	(12.90)	(13.69)	(11.80)
Resources								
Insufficient materials to meet students' needs (%)	23	16	33	20	13	13	20	13
	(.42)	(.37)	(.47)	(.40)	(.34)	(.34)	(.40)	(.34)
Basic supplies never available or often not available (%)	15	10	25	6	7	8	9	3
	(.35)	(.30)	(.43)	(.23)	(.26)	(.28)	(.28)	(.16)
Notebooks never available or often not available (%)	12	7	22	6	5	5	11	3
	(.33)	(.25)	(.41)	(.25)	(.23)	(.22)	(.32)	(.16)
Pens/pencils never available or often not available (%)	21	16	34	9	11	11	23	7
	(.41)	(.36)	(.47)	(.29)	(.32)	(.32)	(.42)	(.25)
Ditto master never available or often not available (%)	12	6	21	6	5	5	8	7
	(.32)	(.24)	(.41)	(.23)	(.22)	(.21)	(.27)	(.25)
Photocopier never available or often not available (%)	19	12	26	23	11	11	19	13
	(.40)	(.32)	(.44)	(.42)	(.32)	(.31)	(.40)	(.33)

Table 15. (cont.)

	≤25% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Climate								
Student behavior interferes strongly or moderately agree (%)	20 (.40)	12 (.33)	33 (.47)	10 (.30)	16 (.37)	15 (.36)	39 (.49)	15 (.36)
Teachers seek new ideas strongly or moderately agree (%)	74 (.44)	79 (.41)	65 (.48)	79 (.41)	74 (.44)	74 (.44)	75 (.44)	79 (.41)
Teachers look forward to work strongly or moderately agree (%)	70 (.46)	77 (.42)	59 (.49)	73 (.45)	81 (.40)	82 (.38)	69 (.46)	82 (.39)
Parents involved in school programs strongly or moderately agree (%)	84 (.36)	85 (.35)	88 (.33)	78 (.41)	87 (.34)	88 (.33)	80 (.40)	77 (.42)
Student Background Characteristics								
Parental expectations	-.17 (.67)	-.17 (.65)	-.18 (.69)	-.26 (.69)	.28 (.52)	.29 (.50)	.12 (.62)	.18 (.57)
Student engagement	-.33 (.61)	-.31 (.58)	-.40 (.63)	-.31 (.64)	.43 (.52)	.44 (.51)	.26 (.59)	.50 (.49)
Math GPA (*M*)	2.71 (.88)	2.81 (.85)	2.66 (.92)	2.64 (.80)	3.69 (.55)	3.73 (.54)	3.56 (.61)	3.70 (.44)
Reading GPA (*M*)	2.50 (.91)	2.68 (.86)	2.42 (.95)	2.37 (.80)	3.52 (.67)	3.58 (.64)	3.25 (.76)	3.58 (.56)
Socioeconomic status	-.32 (.71)	-.12 (.638)	-.48 (.65)	-.56 (.65)	.36 (.79)	.42 (.75)	-.14 (.79)	.03 (.79)
Repeated grade (%)	11 (.32)	10 (.29)	14 (.35)	11 (.32)	10 (.30)	8 (.27)	22 (.42)	13 (.33)
Gifted / talented participant (%)	.5 (.51)	1 (.52)	.3 (.50)	.3 (.51)	7 (.26)	8 (.27)	2 (.14)	9 (.29)

Table 16. School and Classroom Characteristics by Race and Baseline Reading Achievement, First-Grade Cohort

	≤25% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Characteristics of Peers								
Pct. White (Mdn)	38	85	5	9	84	89	32	20
	(35.47)	(24.53)	(28.14)	(20.91)	(29.66)	(21.02)	(30.28)	(36.25)
Pct. Free-lunch eligible (Mdn)	68	43	89	74	28	28	72	50
	(27.85)	(22.94)	(24.73)	(20.06)	(23.98)	(21.15)	(32.05)	(28.78)
Pct. <50th%ile Reading (Mdn)	46	33	50	54	26	25	49	30
	(21.37)	(18.07)	(21.18)	(20.78)	(16.97)	(15.63)	(20.00)	(21.63)
Pct. <25th%ile Reading (Mdn)	20	15	20	20	11	11	12	12
	(14.62)	(12.03)	(17.45)	(13.81)	(10.60)	(9.76)	(16.34)	(12.27)
Pct. <50th%ile Math (Mdn)	37	30	45	54	25	25	40	25
	(20.52)	(18.73)	(19.37)	(20.17)	(16.20)	(15.26)	(18.19)	(19.07)
Pct. <25th%ile Math (Mdn)	15	11	15	18	10	10	13	10
	(13.17)	(11.04)	(15.86)	(11.58)	(9.44)	(8.65)	(14.71)	(10.23)
Resources for High-Achieving Students								
Gifted / talented program available (%)	53	47	41	55	54	54	40	72
	(.50)	(.50)	(.49)	(.51)	(.50)	(.50)	(.49)	(.45)
Teacher uses computers to challenge brightest students (%)	12	18	6	12	11	11	3	14
	(2.96)	(3.45)	(2.21)	(2.96)	(2.77)	(2.78)	(1.51)	(3.17)
Teacher's emphasis on student-centered, advanced-skills instruction (M)	.04	.01	.09	.02	.08	.06	.13	.15
	(.33)	(.33)	(.34)	(.30)	(.32)	(.32)	(.37)	(.27)
High-achieving classmates (M)	-.39	.01	-.60	-.63	.55	.59	.15	.48
	(.72)	(.64)	(.65)	(.69)	(.81)	(.77)	(.89)	(.80)
Characteristics of Teacher / Classrooms								
Master's degree or higher (%)	35	34	37	37	37	39	43	22
	(.48)	(.47)	(.48)	(.48)	(.48)	(.49)	(.49)	(.42)
Years of experience (M)	13.88	13.86	13.90	12.60	13.64	13.78	14.51	11.57
	(8.99)	(8.58)	(9.32)	(8.46)	(9.01)	(8.89)	(9.76)	(7.86)
Years at this school (M)	8.43	8.96	8.94	6.99	8.72	9.06	8.69	6.38
	(7.46)	(7.66)	(7.97)	(6.03)	(7.75)	(7.78)	(8.90)	(5.28)

Table 16 (cont.)

	≤25% Read	White	Afric Amer	Latinio	≥75% Read	White	Afric Amer	Latino
Race of Teacher (%)								
White	70 (.46)	92 (.27)	52 (.34)	65 (.42)	89 (.32)	94 (.23)	65 (.48)	83 (.38)
African American	20 (.40)	4 (.19)	43 (.49)	15 (.36)	7 (.26)	5 (.21)	34 (.48)	15 (.35)
Latino	5 (.21)	1 (.08)	3 (.16)	14 (.35)	.1 (.03)	0 (.00)	0 (.00)	1 (.11)
Asian	3 (.17)	2 (.13)	.5 (.07)	4 (.19)	4 (.19)	1 (.11)	1 (.11)	1 (.11)
Native American	.1 (.02)	0 (.00)	.2 (.04)	0 (.00)	0 (.00)	0 (.00)	0 (.00)	0 (.00)
Other	2 (.13)	2 (.13)	2 (.13)	2 (.15)	.1 (.03)	.1 (.03)	0 (.000)	0 (.00)
Class size (*M*)	24.43 (7.22)	24.92 (9.49)	22.41 (4.53)	26.08 (6.23)	25.18 (8.42)	25.44 (9.00)	23.14 (6.10)	23.36 (4.70)
Percent of class time devoted to academic interaction (*M*)	69.39 (14.21)	69.47 (12.74)	70.14 (15.35)	69.02 (14.60)	71.09 (12.26)	71.31 (12.32)	72.28 (12.49)	71.60 (9.45)
Resources								
Insufficient materials to meet students' needs (%)	23 (.42)	17 (.37)	31 (.46)	19 (.40)	18 (.38)	17 (.37)	33 (.47)	16 (.37)
Basic supplies never available or often not available (%)	13 (.34)	9 (.29)	22 (.42)	5 (.22)	8 (.28)	9 (.28)	17 (.37)	3 (.16)
Notebooks never available or often not available (%)	11 (.32)	6 (.23)	20 (.40)	6 (.24)	7 (.26)	7 (.25)	18 (.38)	3 (.16)
Pens/pencils never available or often not available (%)	20 (.40)	15 (.36)	31 (.46)	9 (.29)	12 (.32)	11 (.31)	34 (.48)	8 (.27)
Ditto master never available or often not available (%)	11 (.32)	6 (.23)	19 (.39)	9 (.28)	6 (.24)	5 (.21)	22 (.41)	9 (.29)
Photocopier never available or often not available (%)	20 (.40)	12 (.32)	27 (.44)	21 (.41)	13 (.33)	11 (.32)	30 (.46)	15 (.35)

Table 16 (cont.)

	≤25% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Climate								
Student behavior interferes strongly or moderately agree (%)	21 (.40)	13 (.33)	32 (.47)	16 (.36)	15 (.35)	13 (.34)	34 (.48)	12 (.33)
Teachers seek new ideas strongly or moderately agree (%)	75 (.43)	79 (.41)	68 (.46)	78 (.41)	72 (.45)	73 (.45)	66 (.47)	74 (.44)
Teachers look forward to work strongly or moderately agree (%)	71 (.46)	77 (.42)	60 (.49)	75 (.44)	79 (.41)	80 (.40)	66 (.48)	88 (.33)
Parents involved in school programs strongly or moderately agree (%)	83 (.38)	86 (.35)	87 (.34)	77 (.42)	87 (.33)	87 (.33)	89 (.31)	70 (.46)
Student Background Characteristics								
Parent expectations	-.18 (.68)	-.15 (.63)	-.22 (.71)	-.29 (.69)	.36 (.50)	.38 (.44)	.23 (.61)	.26 (.52)
Student engagement	-.28 (.63)	-.26 (.59)	-.40 (.63)	-.20 (.64)	.50 (.49)	.51 (.48)	.39 (.55)	.54 (.45)
Math GPA (*M*)	2.75 (.87)	2.80 (.88)	2.66 (.90)	2.83 (.79)	3.76 (.49)	3.78 (.49)	3.68 (.52)	3.78 (.43)
Reading GPA (*M*)	2.46 (.88)	2.63 (.84)	2.33 (.93)	2.49 (.77)	3.71 (.54)	3.74 (.53)	3.59 (.63)	3.63 (.53)
Socioeconomic status	-.33 (.72)	-.09 (.69)	-.50 (.65)	-.55 (.69)	.44 (.79)	.50 (.75)	.01 (.85)	-.09 (.72)
Repeated grade (%)	12 (.32)	9 (.28)	15 (.36)	12 (.32)	9 (.28)	7 (.26)	15 (.36)	12 (.32)
Gifted / talented participant (%)	1 (.51)	1 (.53)	.1 (.50)	.5 (.51)	9 (.29)	9 (.29)	6 (.24)	15 (.35)

Table 17. School and Classroom Characteristics by Race and Baseline Math Achievement, Third-Grade Cohort

	≤25% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Characteristics of Peers								
Pct. White (*Mdn*)	38	85	13	8	84	93	34	27
	(35.29)	(24.67)	(27.99)	(20.59)	(32.29)	(20.93)	(31.54)	(25.48)
Pct. Free-lunch eligible (*Mdn*)	69	43	86	75	25	21	70	69
	(26.26)	(22.79)	(24.23)	(18.00)	(25.33)	(21.28)	(29.53)	(22.72)
Pct. <50th%ile Reading (*Mdn*)	49	31	50	67	30	25	38	48
	(21.42)	(17.21)	(19.99)	(19.31)	(19.06)	(16.88)	(19.65)	(20.97)
Pct. <25th%ile Reading (*Mdn*)	20	15	17	28	11	10	12	23
	(17.73)	(11.41)	(17.81)	(19.85)	(12.07)	(10.24)	(14.49)	(16.03)
Pct. <50th%ile Math (*Mdn*)	45	30	50	60	25	20	28	35
	(20.65)	(17.54)	(18.73)	(18.24)	(17.69)	(15.79)	(18.44)	(18.91)
Pct. <25th%ile Math (*Mdn*)	16	11	15	25	10	10	15	18
	(15.52)	(10.48)	(15.92)	(17.18)	(10.57)	(8.65)	(11.70)	(15.80)
Resources for High- Achieving Students								
Gifted / talented program available (%)	33	33	41	22	23	23	33	19
	(.47)	(.47)	(.49)	(.41)	(.42)	(.42)	(.47)	(.39)
Teacher uses computers to challenge brightest students (%)	13	18	9	11	14	14	21	18
	(3.02)	(3.45)	(2.65)	(2.79)	(3.16)	(3.09)	(3.68)	(3.50)
Teacher's emphasis on student-centered, advanced-skills instruction (*M*)	.02	-.05	.08	.04	.06	.02	.17	.14
	(.37)	(.34)	(.40)	(.35)	(.32)	(.31)	(.31)	(.34)
High-achieving classmates (*M*)	-.47	-.18	-.64	-.64	.51	.49	.34	.27
	(.66)	(.62)	(.62)	(.63)	(.85)	(.78)	(.92)	(.74)
Characteristics of Teacher / Classrooms								
Master's degree or higher (%)	35	41	38	26	39	35	40	40
	(.48)	(.49)	(.49)	(.44)	(.49)	(.48)	(.49)	(.49)
Years of experience (*M*)	13.80	14.73	13.12	13.38	15.43	15.67	13.52	15.62
	(8.73)	(8.84)	(8.50)	(8.69)	(9.11)	(9.11)	(8.17)	(9.33)
Years at this school (*M*)	8.28	9.35	7.17	8.09	9.72	10.19	7.88	8.79
	(7.25)	(7.83)	(6.58)	(6.94)	(7.45)	(7.60)	(6.28)	(6.90)

Table 17 (cont.)

	≤25% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Race of Teacher (%)								
White	69	92	51	62	87	94	63	73
	(.46)	(.27)	(.50)	(.49)	(.34)	(.24)	(.48)	(.46)
African American	19	5	43	14	6	4	31	4
	(.39)	(.22)	(.49)	(.35)	(.24)	(.20)	(.46)	(.21)
Latino	6	1	1	20	3	1	2	18
	(.24)	(.09)	(.11)	(.40)	(.16)	(.09)	(.13)	(.39)
Asian	3	2	1	4	3	1	0	4
	(.17)	(.13)	(.11)	(.20)	(.18)	(.07)	(.00)	(.19)
Native American	1	1	1	0	1	1	1	1
	(.10)	(.08)	(.09)	(.00)	(.09)	(.08)	(.09)	(.09)
Other	1	0	3	.2	.4	.1	3	0
	(.12)	(.00)	(.18)	(.05)	(.06)	(.03)	(.18)	(.00)
Class size (*M*)	24.92	25.08	24.15	26.21	25.41	25.60	24.05	25.56
	(6.23)	(6.53)	(6.58)	(5.33)	(4.16)	(4.03)	(7.73)	(2.83)
Percent of class time devoted to academic interaction (*M*)	70.60	71.13	69.42	71.13	71.26	71.12	71.63	73.37
	(13.33)	(12.99)	(14.25)	(12.47)	(12.87)	(12.62)	(14.13)	(13.61)
Resources								
Insufficient materials to meet students' needs (%)	31	23	42	30	23	20	56	21
	(.46)	(.42)	(.49)	(.46)	(.42)	(.40)	(.50)	(.41)
Basic supplies never available or often not available (%)	15	11	21	16	11	10	29	8
	(.36)	(.38)	(.41)	(.37)	(.31)	(.31)	(.45)	(.27)
Notebooks never available or often not available (%)	14	4	21	18	6	6	13	6
	(.34)	(.20)	(.41)	(.38)	(.24)	(.23)	(.34)	(.23)
Pens/pencils never available or often not available (%)	14	5	21	17	7	7	12	9
	(.35)	(.22)	(.41)	(.38)	(.25)	(.25)	(.32)	(.28)
Ditto master never available or often not available (%)	14	7	16	19	5	4	19	10
	(.34)	(.26)	(.37)	(.39)	(.23)	(.20)	(.39)	(.30)
Photocopier never available or often not available (%)	26	18	36	25	16	15	42	16
	(.44)	(.39)	(.48)	(.43)	(.37)	(.35)	(.50)	(.37)

Table 17. (cont.)

	≤25% Math	White	Afric Amer	Latino	≥75% Math	White	Afric Amer	Latino
Climate								
Student behavior interferes strongly or moderately agree (%)	23 (.42)	18 (.38)	33 (.47)	19 (.40)	15 (.35)	12 (.33)	41 (.49)	16 (.37)
Teachers seek new ideas strongly or moderately agree (%)	73 (.44)	76 (.43)	73 (.44)	72 (.45)	70 (.46)	73 (.45)	58 (.50)	69 (.46)
Teachers look forward to work strongly or moderately agree (%)	69 (.46)	74 (.44)	59 (.49)	73 (.44)	76 (.43)	77 (.42)	67 (.47)	70 (.46)
Parents involved in school programs strongly or moderately agree (%)	84 (.37)	85 (.36)	87 (.34)	80 (.40)	90 (.29)	90 (.30)	93 (.26)	87 (.33)
Student Background Characteristics								
Number of schools attended since first grade	1.91 (1.12)	1.79 (1.07)	1.96 (1.13)	1.98 (1.16)	1.42 (.75)	1.37 (.72)	1.56 (.89)	1.54 (.73)
Locus of control	-.19 (.44)	-.14 (.42)	-.24 (.44)	-.20 (.45)	.26 (.31)	.29 (.29)	.17 (.35)	.19 (.36)
Self concept	-.12 (.38)	-.13 (.42)	-.07 (.34)	-.17 (.36)	.21 (.36)	.22 (.35)	.24 (.35)	.08 (.38)
Self-efficacy in math	-.29 (.57)	-.27 (.58)	-.22 (.53)	-.40 (.58)	.38 (.35)	.41 (.34)	.34 (.35)	.25 (.44)
Self-efficacy in reading	-.28 (.60)	-.18 (.58)	-.26 (.58)	-.46 (.61)	.38 (.31)	.43 (.28)	.30 (.31)	.24 (.41)
Attitude towards school	-.11 (.50)	-.18 (.53)	-.09 (.47)	-.05 (.47)	.09 (.41)	.07 (.42)	.08 (.38)	.16 (.45)
Student engagement	-.42 (.58)	-.42 (.58)	-.52 (.58)	-.32 (.57)	.55 (.45)	.57 (.44)	.43 (.52)	.50 (.45)
Parental expectations	-.32 (.67)	-.37 (.71)	-.26 (.63)	-.37 (.68)	.36 (.39)	.38 (.37)	.35 (.42)	.15 (.50)
GPA (*M*)	2.45 (.72)	2.57 (.71)	2.30 (.70)	2.50 (.74)	3.70 (.47)	3.75 (.44)	3.55 (.53)	3.58 (.50)
Socioeconomic status	-.35 (.69)	-.08 (.69)	-.44 (.66)	-.60 (.61)	.35 (.77)	.46 (.71)	.008 (.81)	-.28 (.71)
Repeated grade (%)	22 (.41)	18 (.38)	31 (.46)	16 (.37)	3 (.18)	3 (.17)	8 (.28)	2 (.13)
Gifted / talented participant (%)	1 (.49)	2 (.50)	1 (.51)	2 (.44)	21 (.41)	21 (.41)	19 (.40)	19 (.39)

Table 18. School and Classroom Characteristics by Race and Baseline Reading Achievement, Third-Grade Cohort

	≤25 Read	White	Afric Amer	Latino	≥75 Read	White	Afric Amer	Latino
Characteristics of Peers								
Pct. White (*Mdn*)	34	85	13	8	87	94	20	34
	(34.73)	(25.00)	(27.88)	(21.36)	(30.08)	(20.03)	(29.97)	(27.38)
Pct. Free-lunch eligible (*Mdn*)	69	43	85	75	25	22	72	61
	(26.26)	(23.73)	(25.26)	(18.73)	(23.51)	(20.10)	(31.30)	(24.73)
Pct. <50th%ile Reading (*Mdn*)	49	30	50	65	30	25	38	48
	(21.89)	(18.22)	(20.89)	(19.96)	(17.25)	(15.26)	(19.23)	(20.69)
Pct. <25th%ile Reading (*Mdn*)	20	15	19	28	10	11	12	25
	(17.52)	(12.10)	(18.16)	(18.89)	(10.89)	(9.57)	(13.44)	(15.33)
Pct. <50th%ile Math (*Mdn*)	44	30	50	60	24	20	28	35
	(20.86)	(18.11)	(19.29)	(18.78)	(16.34)	(14.53)	(18.39)	(19.30)
Pct. <25th%ile Math (*Mdn*)	17	11	15	25	10	10	15	19
	(15.58)	(11.08)	(16.64)	(16.70)	(9.86)	(8.17)	(12.04)	(15.65)
Resources for High-Achieving Students								
Gifted / talented program available (%)	33	35	42	20	73	73	65	77
	(.47)	(.48)	(.49)	(.40)	(.44)	(.44)	(.48)	(.42)
Teacher uses computers to challenge brightest students (%)	11	18	6	9	15	14	16	19
	(2.79)	(3.43)	(2.15)	(2.59)	(3.17)	(3.15)	(3.32)	(3.55)
Teacher's emphasis on student-centered, advanced-skills instruction (*M*)	.04	-.03	.05	.12	.06	.04	.13	.18
	(.37)	(.34)	(.39)	(.35)	(.31)	(.31)	(.37)	(.23)
High-achieving classmates (*M*)	-.49	-.18	-.65	-.64	.56	.61	.26	.23
	(.66)	(.62)	(.67)	(.60)	(.82)	(.80)	(.87)	(.68)
Characteristics of Teacher / Classrooms								
Master's degree or higher (%)	37	41	44	27	39	36	49	40
	(.48)	(.49)	(.50)	(.44)	(.49)	(.48)	(.50)	(.49)
Years of experience (*M*)	13.37	14.11	12.98	12.87	15.40	15.48	14.52	14.75
	(8.77)	(8.83)	(8.51)	(8.79)	(8.74)	(8.74)	(7.67)	(8.55)
Years at this school (*M*)	7.86	8.68	7.38	7.57	9.95	10.21	8.89	8.45
	(6.99)	(7.51)	(6.61)	(6.74)	(7.66)	(7.80)	(6.11)	(6.67)

Table 18. (cont.)

	≤25% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Race of Teacher (%)								
White	67 (.47)	92 (.27)	49 (.50)	61 (.49)	89 (.32)	94 (.23)	62 (.49)	77 (.43)
African American	20 (.40)	4 (.19)	45 (.50)	13 (.34)	7 (.25)	4 (.20)	37 (.49)	5 (.22)
Latino	7 (.26)	1 (.08)	1 (.11)	21 (.41)	2 (.13)	1 (.08)	0 (.00)	15 (.36)
Asian	3 (.18)	2 (.15)	2 (.13)	4 (.19)	3 (.16)	.4 .07)	0 (.00)	2 (.14)
Native American	1 (.09)	1 (.09)	1 (.09)	0 (.00)	1 (.07)	.4 (.06)	1 (.10)	1 (.10)
Other	2 (.13)	.2 (.05)	3 (.16)	2 (.13)	0 (.00)	0 (.00)	0 (.00)	0 (.00)
Class size (*M*)	24.10 (8.83)	24.25 (9.63)	24.36 (6.84)	25.50 (9.32)	25.29 (5.60)	25.43 (5.14)	28.46 (9.38)	23.63 (5.57)
Percent of class time devoted to academic interaction (*M*)	70.70 (12.77)	71.53 (11.48)	69.32 (13.95)	71.55 (11.93)	71.31 (12.86)	71.37 (12.34)	70.68 (15.76)	72.50 (15.23)
Resources								
Insufficient materials to meet students' needs (%)	35 (.48)	27 (.44)	44 (.50)	33 (.47)	23 (.42)	22 (.41)	56 (.50)	15 (.36)
Basic supplies never available or often not available (%)	15 (.36)	12 (.32)	19 (.39)	17 (.37)	13 (.34)	13 (.34)	29 (.45)	5 (.22)
Notebooks never available or often not available (%)	13 (.34)	8 (.27)	18 (.39)	14 (.35)	9 (.28)	8 (.28)	22 (.42)	5 (.22)
Pens/pencils never available or often not available (%)	14 (.35)	8 (.26)	19 (.39)	17 (.37)	10 (.31)	11 (.31)	15 (.36)	8 (.27)
Ditto master never available or often not available (%)	14 (.35)	8 (.27)	17 (.38)	18 (.38)	5 (.22)	5 (.21)	15 (.36)	3 (.17)
Photocopier never available or often not available (%)	25 (.43)	18 (.38)	33 (.47)	25 (.44)	18 (.38)	18 (.38)	39 (.49)	9 (.29)

Table 18. (cont.)

	≤25% Read	White	Afric Amer	Latino	≥75% Read	White	Afric Amer	Latino
Climate								
Student behavior interferes strongly or moderately agree (%)	25 (.43)	18 (.38)	35 (.48)	22 (.41)	15 (.36)	13 (.33)	50 (.50)	15 (.36)
Teachers seek new ideas strongly or moderately agree (%)	70 (.46)	72 (.45)	71 (.45)	70 (.46)	70 (.46)	71 (.45)	55 (.50)	69 (.46)
Teachers look forward to work strongly or moderately agree (%)	71 (.46)	76 (.43)	63 (.48)	73 (.44)	76 (.43)	77 (.42)	63 (.48)	71 (.46)
Parents involved in school programs strongly or moderately agree (%)	84 (.36)	84 (.36)	88 (.32)	82 (.38)	90 (.30)	90 (.30)	85 (.35)	87 (.34)
Student Background Characteristics								
Number of schools attended since first grade	1.92 (1.11)	1.78 (1.04)	1.96 (1.12)	1.98 (1.13)	1.39 (.75)	1.35 (.71)	1.58 (.93)	1.67 (.89)
Locus of control	-.21 (.43)	-.19 (.41)	-.26 (.44)	-.20 (.44)	.29 (.31)	.30 (.31)	.25 (.31)	.22 (.36)
Self concept	-.11 (.36)	-.13 (.40)	-.07 (.33)	-.15 (.34)	.20 (.39)	.21 (.39)	.22 (.36)	.08 (.39)
Self-efficacy in math	-.18 (.57)	-.14 (.59)	-.15 (.54)	-.29 (.58)	.29 (.44)	.31 (.43)	.18 (.48)	.17 (.51)
Self-efficacy in reading	-.36 (.58)	-.32 (.57)	-.31 (.56)	-.48 (.60)	.43 (.27)	.45 (.26)	.34 (.29)	.32 (.37)
Attitude towards school	-.08 (.48)	-.14 (.52)	-.01 (.46)	-.03 (.45)	.07 (.43)	.06 (.43)	.09 (.35)	.09 (.55)
Student engagement	-.39 (.58)	-.41 (.56)	-.50 (.57)	-.30 (.58)	.53 (.47)	.54 (.46)	.43 (.55)	.45 (.55)
Parental expectations	-.33 (.69)	-.41 (.70)	-.27 (.67)	-.38 (.68)	.39 (.37)	.39 (.37)	.35 (.39)	.28 (.47)
GPA (*M*)	2.46 (.75)	2.52 (.75)	2.31 (.71)	2.56 (.76)	3.71 (.45)	3.74 (.43)	3.42 (.51)	3.63 (.50)
Socioeconomic status	-.39 (.68)	-.15 (.67)	-.44 (.65)	-.61 (.63)	.45 (.74)	.50 (.70)	.12 (.83)	-.13 (.76)
Repeated grade (%)	23 (.42)	20 (.40)	33 (.47)	17 (.38)	3 (.17)	3 (.17)	4 (.21)	2 (.15)
Gifted / talented participant (%)	1 (.50)	1 (.49)	1 (.51)	2 (.44)	21 (.41)	21 (.41)	21 (.41)	20 (.40)

Consistent differences between low- and high-achieving minorities were found in the availability of resources for high-achieving students. Across both cohorts and subject areas, high achieving minorities were more likely to attend classes with high-achieving peers than were low-achieving minorities. With regard to the emphasis placed on student-centered, advanced skills oriented curriculum and instruction, the classrooms attended by Latino students from the first-grade cohort who achieved highly in reading emphasized these methods to a greater extent than the classrooms attended by their low-achieving peers (standardized difference of .39). In the third-grade cohort, Latino students achieving highly in math were more likely to attend classrooms that stressed this form of curriculum and instruction than the classrooms attended by low-achieving Latino students (difference of .27 *SD*s). In the first-grade cohort, high-achieving minority students attended schools that were more likely to offer a gifted and talented program than the schools attended by low-achieving minorities. A standardized difference of .34 was found for Latino students achieving highly in reading and a difference of .38 *SD*s was found for African American high achievers in math.

Relative to the schools attended by their low-achieving peers, the schools attended by first-grade cohort African American math high achievers were more likely to have sufficient materials to meet their needs (standardized difference of .31). The same result was found for both high-achieving Latino and African American students from the third-grade cohort reading sample (differences of .37 and .25 *SD*s, respectively). In other words, the sufficiency of materials to meet students' needs was one-quarter to nearly two-fifths of one standard deviation greater within high-achievers' classrooms.

Most teacher characteristics did not differ by achievement level. Both high- and low-achieving minority students across both cohorts and subjects, were taught by teachers with

similar levels of teaching experience, in classrooms of similar sizes, with comparable amounts of class time devoted to academic instruction. A moderate difference was found in the teacher's education level for Latino students in the third-grade cohort. High-achieving Latino students were more likely than low-achieving Latino students to be taught by teachers with a Master's degree or higher, with a standardized difference of about .26. Across subjects in the third-grade cohort, high-achieving African American and Latino students were not as likely as low-achieving minority students to be taught by teachers of their respective races.

A number of differences in student characteristics were found between high- and low-achieving minorities. For both cohorts and subjects, high-achieving minorities came from more economically advantaged backgrounds (differences ranged from .34 to .82 *SD*s) and displayed greater student engagement than their low-achieving peers (a .31 *SD* advantage for Latino high math achievers and a 1.60 *SD* advantage for African Americans achieving highly in reading). Parents of high-achieving minorities held considerably higher educational expectations than parents of low-achieving minorities (differences ranged from .78 to .91 *SD*s). In the third-grade cohort, regardless of subject area, high-achieving minorities were less likely to have repeated a grade and were more likely to have participated in a gifted and talented program. In the first-grade cohort, Latino students who achieved highly in reading were more likely to have participated in a gifted and talented program than low-achieving Latino students.

For the third-grade cohort, additional student characteristic variables were examined. For both reading and math, minority low achievers experienced moderately greater mobility than high achievers, in that they changed schools more often from third to sixth grade. In addition, across subject area, high-achieving minorities exhibited a greater degree of internal locus of control, a more positive self-concept, greater self-efficacy in math and reading, and a more

positive attitude toward school than did low-achieving minorities. Large differences ranging from .64 to 1.38 *SD*s were found for all of the affective variables mentioned except attitude toward school, for which only moderate differences were found. These advantages are consistent with the positive characteristics that researchers often find for resilient children.

Section 4. Summary of Results and Conclusion

This series of analyses produced a number of findings that are relevant to understanding the academic progress of elementary-aged minority children, and potential methods and policies for advancing minority students' achievements. This section provides a summary of findings, and interpretations and potential implications of the results. We conclude with several suggestions for future research.

Summary of Results

Our initial analyses indicated that White students are overrepresented among those who achieve at levels at or above the 50th, 75th, and 95th national percentiles, and from third through sixth grade, Asian students are overrepresented among students at or above the 95th percentile in math. In contrast, although African American and Latino students represent, respectively, about 15% and 10% of the nation's students, only 5% to 8% of the students from each racial/ethnic group achieved at or above national norms. Similarly, Latino and African American students are underrepresented among students at or above the 75th and 95th national percentiles.

For both cohorts, African American and Latino students are somewhat more likely to be found among the highest math achievers than among the highest reading achievers. This result may be influenced by the observation made by various researchers that schooling tends to have a greater influence on students' math relative to reading outcomes (e.g., Murnane, 1975; Borman & D'Agostino, 1996). In contrast, dissonance between the home and school caused by cultural and language differences may contribute to African American and Latino students' relatively poorer reading outcomes (Boykin, 1992; Gordon & Yowell, 1992).

Longitudinal achievement trends of White, Latino, and African American students from a

national sample suggest that large White-minority achievement differences remain relatively constant across the first six grades of school. In contrast, the gaps between Native American and White students tend to increase from third to sixth grade. The student engagement gaps between African American and White students, and between Native American and White students remain relatively consistent in magnitude from first through third grade. However, as Latino students progress from first to third grade their teachers report consistently higher levels of engagement with classroom activities. For the third-grade cohort, the engagement gaps between African American and White students and between Latino and White students do not change over time. As Native Americans progress from third to sixth grade, though, their teachers report consistently lower levels of engagement with classroom activities.

Longitudinal achievement and engagement outcomes for initial high achievers revealed different trends. Analyses of longitudinal achievement tend to suggest high-achieving females learn at faster rates than their male counterparts. From third to sixth grade, the reading achievements of initially high-achieving African American students fall behind those of similar White students. Analyses of initially high-achieving Latino students indicate that they learn at similar or somewhat faster rates than White students.

However, one must recognize that these Latino students tend to be a more advantaged subsample of the total Latino population. Another Latino subsample from *Prospects* received a Spanish assessment rather than the English CTBS/4. These students, for whom English was a second language, were not included in our analyses because the content, metric, and norms of the Spanish assessment are not equivalent to the English CTBS/4 test.

In general, statistically significant learning differences were found for the subsamples of students with initial achievement levels at or above the 50th national percentile. Fewer

significant differences were found for the subsamples of students at or above the 75th percentile. In large part, these results were driven by the fact that the latter subsamples were comprised of fewer students, and, therefore, the coefficients for the learning rates were estimated with considerable error.

The findings of most consistency are for the student engagement outcome. The results indicate the process of disengagement begins at first grade and continues through the sixth grade for high-achieving students of lower SES levels. This result held for both cohorts, for both high-achieving subsamples, and for students of all racial/ethnic groups. After taking into account SES, African American students who began third grade at or above the 50th national percentile disengage at a significantly faster rate than comparable White students. The potential explanations of this disengagement are diverse. Future research should explore the individual and school factors that may be contributing to this process, especially for high-achieving students of low-SES levels.

Additional analyses compared students' longitudinal achievement trends across schools. First, national data for both grade cohorts from *Prospects* indicate that African American and Latino students are strikingly overrepresented within high-poverty schools (i.e., 75% or more of the students receive free lunches) and underrepresented within low-poverty schools (i.e., 25% free lunch or less). Longitudinal math outcomes for initial high achievers from the first-grade cohort suggest that, relative to those who attend low-poverty schools, students who attend high-poverty schools learn at slower rates over time. Also, initially high-achieving African American and Latino students from high-poverty schools learn reading at slower rates than their peers from low-poverty schools. Results for student engagement are mixed, as African American students from high poverty schools become more disengaged over time relative to African American

students from low-poverty schools, but the opposite is true for Latino students. For third-grade cohort initial high achievers, there is only one notable longitudinal difference between the learning rates of students from high- and low-poverty schools: the reading achievement of African American students. However, all students from high-poverty schools disengage from school activities at faster rates than their peers from low-poverty schools.

The analyses comparing the longitudinal achievements of first- and third-grade cohort African American students from a national sample of high-poverty schools (i.e., 75% or greater) to the outcomes for African American students who attended high-poverty *Special Strategies* schools reveal the potential benefits of replicable, whole-school reform designs. Three of four hierarchical models suggest that African American students who attend high-poverty schools with replicable whole-school reform designs learn at faster rates than their peers in similar schools without the reforms. This finding is consistent with the results reported for the Success For All whole-school reform design (Ross et al., 1997).

Other analyses compared longitudinal outcomes for initially high-achieving African Americans from the two groups of schools. The results for the high-achieving subsamples indicate that *Special Strategies* students learn at faster rates than similar high-achieving *Prospects* students, but the differences did not reach statistical significance. Unfortunately, the samples of high-achieving *Special Strategies* African American students were quite small. This compromised the hierarchical analyses of high-achievers' longitudinal outcomes. Most previous analyses of these and other whole-school reforms address the academic progress of low-achieving students. Future research on the outcomes for minority students with average or high initial achievement levels is needed.

The next series of analyses compared by race/ethnicity, the individual, classroom, and school characteristics for all students and for high-achieving students. The results suggest that relative to White students, minority students attend more impoverished, more segregated, lower achieving schools with fewer resources to meet student needs in both the total national sample and in the high-achieving subsamples. Obviously, these results help in explaining the large White-minority achievement gaps in America. Although these differences exist for high-achieving minorities as well, several factors may explain their academic success. For instance, with respect to the achievement levels of their peers, high-achieving White and African American students attend classrooms that were more alike than those attended by White and African American students in the overall sample. Also, for the third-grade cohort in comparison to high-achieving White students' classrooms, the emphasis on student-centered, advanced-skills oriented instruction was considerably greater within high-achieving African American students' classrooms

The analyses contrasting the individual, classroom, and school characteristics of high- (i.e., 75th percentile or greater) and low- (i.e., 25th percentile or lower) achieving minorities reveal more pronounced disparities. High-achieving minority students are more likely to attend schools that are more integrated and less impoverished than those that their low-achieving counterparts attend. Also, relative to the schools that low-achievers attend, the schools that African American and Latino high achievers attend generally are more likely to have sufficient materials and resources to meet their needs. High achieving minorities are more likely to attend classes with high-achieving peers than are low-achieving minorities, and they also are more likely to attend classrooms that place a greater emphasis on student-centered, advanced skills oriented curriculum and instruction. However, most teacher characteristics do not differ by

achievement level. Both high- and low- achieving minority students across both cohorts and subjects, are taught by teachers with similar levels of experience, in classrooms of similar sizes, with comparable amounts of class time devoted to academic instruction.

A number of differences in student characteristics were found between high- and low-achieving minorities. For both cohorts and subjects, high-achieving minorities come from more economically advantaged backgrounds and display greater student engagement than their low-achieving peers. Also, parents of high-achieving minorities hold higher educational expectations than parents of low-achieving minorities. In the third-grade cohort, regardless of subject area, high-achieving minorities are less likely to repeat a grade and are more likely to participate in a gifted and talented program. In the first-grade cohort, Latino students who achieve highly in reading are more likely to participate in gifted and talented programs than low-achieving Latino students.

Finally, for the third-grade cohort, additional student characteristic variables were examined. Minority low achievers experience moderately greater mobility than high achievers, in that they change schools more often from third to sixth grade. In addition, high-achieving minorities exhibit a greater degree of internal locus of control, a more positive self-concept, greater self-efficacy in math and reading, and a more positive attitude toward school than do low-achieving minorities. Large differences were found for all of the affective variables mentioned except attitude toward school, for which only moderate differences were found.

Conclusion

As results from other analyses of national data sets have indicated, these results suggest that minority students are poorly represented among the nation's high achievers. Furthermore,

some evidence suggests that poor and African American students who begin their early school years at or above the 50th percentile are not able to keep pace with the achievements of more advantaged and White students. High-achieving Latino students, though, learn at rates that are as fast, or faster, than those of their White counterparts. Although there is not considerable evidence of an expanding achievement gap between White and minority high achievers, the results do suggest that high-achieving students from lower SES backgrounds begin a process of disengagement from school from the time they begin first grade. It also appears that the boys' achievements are more likely to suffer over time than girls' achievements, and that boys are more likely to disengage from school.

Limited samples of high-achieving minority students at or above the 75th national percentile reduced the statistical power of the hierarchical analyses of longitudinal achievement trends. Nevertheless, no significant White-minority differences were found for the relatively small samples. It may be, as Montgomery & Rossi (1994) suggest, that minority students who score at or above the 75th percentile at the beginning of their school careers have considerable resources outside of school that mediate the effects of attending poor schools and classrooms. However, similar to the findings of Phillips et al. (in press), our analyses of students who began third grade at or above the 50th percentile suggest that the African American-White reading achievement gap widens as students progress from third through sixth grade. Larger samples of high-achieving minority students are needed to assess their learning trends more accurately

Similar to findings of Kennedy et al., (1986) for all students who attend high-poverty schools, the results suggest that high-achieving minorities lose ground relative to their peers in low-poverty schools across the first through third grades. However, from third through sixth grade, high achievers in low- and high-poverty schools learn at similar rates. Fortunately,

replicable, whole-school reform designs hold some promise for advancing the learning of African American students within high-poverty schools. Although the results suggested that high-achieving African Americans may benefit from these reforms, the finding did not reach statistical significance. Future research is needed to examine the effectiveness of existing reforms for high-achieving minorities, and to identify other programs that foster high achievement.

Many aspects of schools and classrooms that are associated with minority high achievement are readily alterable. For instance, the findings suggest that the following conditions hold promise:

- greater emphasis on student-centered, and advanced-skills oriented curriculum and instruction;
- improved access to gifted and talented programs;
- greater interaction with peers who share the achievement ideology;
- improved funding and availability of school resources;
- greater racial and socioeconomic integration.

However, carefully controlled studies of high achieving minority students are needed to ascertain the efficacy of these various policy options.

Finally, schools and families may work toward promoting many individual characteristics consistent with the positive characteristics that researchers often find for resilient children. For instance, teachers should attempt to design engaging school activities and expect all students to complete school work and participate fully in the classroom. Also, parents of high-achieving minorities should communicate high educational expectations to their children, and should attempt to minimize the frequency of moves, which may disrupt students' school progress.

Finally, parents and schools should attempt to foster the development of children's affective attributes, such as an internal locus of control, a more positive self-concept, greater self-efficacy in math and reading, and a more positive attitude toward school.

Perhaps most importantly though, future studies should explore these issues and others that may be related to advancing minority students' achievements. Existing national data sets are quite limited, in that few high-achieving minority students are represented in them. In other cases, it is impossible to estimate with any reliability the progress of groups of initially high achieving students, such as Native Americans. Considering the recent historical trends in achievement, and considering the lack of research on effective classroom and school practices for high-achieving minorities, the most profitable efforts may be those that research and develop school-based programs and reforms that promote academic excellence for minority students.

References

Allington, R.C. (1980). Teacher interruption behaviors during primary grade oral reading. Journal of Educational Psychology, 72, 371-377.

Banks, J.A., & Banks, C.A.M. (Eds.). (1993). Multicultural education: Issues and perspectives (2nd ed.). Boston: Allyn & Bacon.

Barton, P.E., Coley, R.J., & Goertz, M.E. (1991). The state of inequality. Princeton, NJ: Educational Testing Service.

Borman, G.D., & D'Agostino, J.V. (1996). Title I and student achievement: A meta-analysis of federal evaluation results. Educational Evaluation and Policy Analysis, 18, 309-326.

Boykin, A.W. (1992). Harvesting talent and culture: African American children and educational reform. In R.J. Rossi (Ed.), Schools and students at risk: Context and framework for positive change. New York: Teachers College Press.

Brophy, J. (1983). Research on the self-fulfilling prophecy and teacher expectations. Journal of Educational Psychology, 75, 636.

Brophy, J. (1988). Research on teacher effects: Uses and abuses. Elementary School Journal, 89(1), 3-22.

Burton, N. W., & Jones, L. V. (1982). Recent trends in achievement levels of Black and White youth. Educational Researcher, 4, 10-17.

Bryk, A.S., Raudenbush, S.W., & Congdon, R.T., Jr. (1994). Hierarchical linear modeling with the HLM/2L and HLM/3L programs. Chicago: Scientific Software International.

Campbell, D.T. & Stanley, J.C. (1963). Experimental and quasi-experimental designs for research. Boston: Houghton-Mifflin.

Campbell, J., Donahue, P., Reese, C., & Phillips, G. (1996). NAEP 1994 reading report card of the nation and the states: Findings from the national assessment of educational progress and the trial state assessment. Washington, DC: National Center for Education Statistics.

Cornell, D. G., Delcourt, M. A., Goldberg, M. D., & Bland, L. C. (1995). Achievement and self-concept of minority students in elementary school gifted programs. Journal for the Education of the Gifted, 18, 189-209.

Darling-Hammond, L. (1996). Cracks in the bell curve: How education matters. Journal of Negro Education, 64, 340-353.

Derevensky, J. L., Hart, S., & Farrell, M. (1983). An examination of achievement-related behavior of high- and low-achieving inner-city pupils. Psychology in the Schools, 20, 328-336.

Dusek, J. and Joseph, G. (1986). The bases of teacher expectations: A meta-analysis. Journal of Educational Psychology, 75, 327.346.

Entwisle, D. and Alexander, K. (1988). Factors affecting achievement test scores and marks of Black and White first graders. Special issue: Minorities. Elementary School Journal, 88, 449-471.

Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. Journal of Applied Psychology, 82, 221-234.

Finn, J. D. (1989). Withdrawing from school. Review of Educational Research, 59, 117-142.

Ford, D. Y. (1996, April). A study of underachievement among gifted Black students. Paper presented at the annual meeting of the American Educational Research Association, New York. (ERIC Document Reproduction Service No. ED 399 324)

Ford, D. Y., & Harris III, J. J. (1996). Perceptions and attitudes of Black students toward school, achievement, and other educational variables. Child Development, 67, 1141-1152.

Gill, S., & Reynolds, A.J. (1996, August). Role of parent expectations in the school success of at risk children. Poster presented at the XIVth biennial ISSBD conference, Quebec City. (ERIC Document Publication Service No. ED 401 019)

Gordon, E.W., & Yowell, C. (1992). Cultural dissonance as a risk factor in the development of students. In R.J. Rossi (Ed.), Schools and students at risk: Context and framework for positive change. New York: Teachers College Press.

Gordon, R. (1984). Digits backward and the Mercer-Kamin law: Empirical response to Mercer's treatment of internal validity of IQ tests. In C.R. Reynolds & R.T. Brown (Eds.), Perspectives on bias in mental testing, (pp. 357-506). New York: Plenum.

Haynes, N.M., & Emmons, C.L. (1997). Comer School Development Program effects: A ten-year review, 1986-1996. New Haven, CT: Yale University Child Study Center.

Hedges, L.V., Laine, R.D., & Greenwald, R. (1994). Does money matter? A meta-analysis of studies of the effects of differential school inputs on student outcomes. Educational Researcher, 23(3), 5-14.

Irvine, J. (1990). Black children and school failure: Policies, practices, and prescriptions. New York: Greenwood Press.

Johnson, N.E., et al. (1994). Understanding gifted underachievers in an ethnically diverse population. San Diego, CA: San Diego State University. (ERIC Document Publication Service No. ED 368 101).

Jones, L. (1984). White-Black achievement differences: The narrowing gap. American Psychologist, 39, 1207-1213.

Jones, L. (1987, May). Achievement trends for Black school children, 1970 to 1984. Paper presented at the colloquium Black Families and Public Policy: Historical and Contemporary Perspectives, Yale Bush Center and Yale Child Center, New Haven, CT. (ERIC Document Publication Service)

Kaufman, J. E., & Rosenbaum, J. E. (1992). Education and employment of low-income Black youth in White suburbs. Education and Policy Analysis, 14, 229-240.

Kennedy, M.M., Jung, R.K., & Orland, M.E. (with D. Myers, S. Chaikind, M. Wang, J.L. Peterson, M. Schwartz, & A. Milne) (1986). Poverty, achievement, and the distribution of compensatory education services. Washington, DC: Office of Educational Resaerch and Improvement, U.S. Department of Education.

Knapp, M.S. (with N.E. Adelman, C. Mardner, H. McCollum, M.C. Needels, C. Padilla, P.M., Shields, B.J. Turnbull, & A.A. Zucker). (1995). Teaching for meaning in high-poverty classrooms. New York: Teachers College Press.

Kozol, J. (1991). Savage inequalities: Children in America's schools. New York: Harper Perennial.

Lanasa III, P. J., & Potter, J.H. (1984, October). Building a bridge to span the minority-majority achievement gap. Paper presented at the Second National Conference on Desegregation in Postsecondary Education, Durham, NC. (ERIC Document Publication Service No. ED 251 534)

Lee, V.E., Winfield, L.F., & Wilson, T.C. (1991). Academic behaviors among high-achieving African American students. Education and Urban Society, 24, 65-86.

Levine, D.U., & Eubanks, E.E. (1990). Achievement disparities between minority and nonminority students in suburban schools. Journal of Negro Education, 59, 186-194.

Lewis, J. (1990). Chicago's two public school systems: Standardized test results compared by racial/ethnic group. Chicago, IL: Chicago Urban League, Department of Research and Planning. (ERIC Document Publication Service No. ED 404 419).

Linn, R.L. (1982). The validity of the Title I Evaluation and Reporting System. In E.R. Reisner, M.C. Alkin, R.F. Boruch, R.L. Linn, & J. Millman (Eds.), Assessment of the Title I Evaluation and Reporting System. Washington, DC: U.S. Department of Education.

Loehlin, J., Lindzey, G., and Spuhler, J. (1975). Race differences in intelligence. San Francisco: W.H. Freeman & Co.

Madden, N.A., Slavin, R.E., Karweit, N.L., Dolan, L., and Wasik, B.A. (1991). Success for All. Phi Delta Kappan, 72, 593-599.

McCollum, P.A. & Walker, C.L. (1992). Minorities in America 2000. Education and Urban Society, 24, 178-195.

McDill, E.L., Natriello, G., & Pallas, A.M. (1985). Raising standards and retaining students: The impact of the reform recommendations on dropouts. Review of Educational Research, 55, 415-433.

Meier, K.J., Stewart, J., Jr., & England, R.E. (1989). Race, class, and education: The politics of second-generation discrimination. Madison, WI: University of Wisconsin Press.

Montgomery, A., & Rossi, R. (1994). Educational reforms and students placed at risk: A review of the current state of the art. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Murnane, R.J. (1975). The impact of school resources on the learning of inner city children. Cambridge, MA: Ballinger.

Nathaniel Hawthorne Elementary School: San Antonio, Texas. (1997). American Educator, 20(4), 9-16.

National Commission on Excellence in Education. (1983). A nation at risk: The imperative for educational reform. Washington, D.C.: U.S. Government Printing Office.

Natriello, G. (1984). Problems in the evaluation of students and student disengagement from secondary schools. Journal of Research and Development in Education, 17, 14-24.

Natriello, G., Pallas, A.M., McDill, E.L., McPartland, J.M., & Royster, D. (1988). An examination of the assumptions and evidence for alternative dropout prevention programs in high school. Baltimore, MD: Johns Hopkins University, Center for Social Organization of Schools.

Nystrand, M., & Gamoran, A. (1989). Instructional discourse and student engagement. Madison, WI: National Center on Effective Secondary Schools. (ERIC Document Publication Service No. ED 319 780).

Ogbu, J.U. (1988). Human Intelligence testing: A cultural-ecological perspective. Phi Kappa Phi Journal, 68, 23-29.

Osborne, J.W. (1997). Race and academic disidentification. Journal of Educational Psychology, 89, 728-735.

Phillips, M., Crouse, J., & Ralph, J. (in press). Does the Black-White test score gap widen after children enter school? In C. Jencks, & M. Phillips (Eds.), The Black-White test score gap. Washington, DC: Brookings.

Powell, D., & Peet, S.H. (1996, April). Educational/occupational expectations and aspirations: mother's views of their children's futures. Poster presented at the annual meeting of the American Educational Research Association, New York.

Rancifer, J.L., & Pinchback, C. (1990). The decline of Blacks in mathematics: Implications for elementary, secondary, and higher education. (ERIC Document Publication Service No. ED 327 392)

Ross, S.M., Smith, L.J., & Casey, J.P. (1997). Preventing early school failure: Impacts of Success For All on standardized test outcomes, minority group performance, and school effectiveness. Journal of Education for Students Placed At Risk, 2, 29-53.

Ruenzel, D. (1997). Washington Core Knowledge School: Fort Collins, Colorado. American Educator, 20(4), 8, 24-29.

Samsa, G.P. (1992). Resolution of a regression paradox in pretest-posttest designs. Journal of Educational Measurement, 29, 321-328.

Serwatka, T.S., Deering, S., & Stoddard, A. (1989). Correlates of the underrepresentation of Black students in classes for gifted students. Journal of Negro Education, 58, 520-530.

Shields, P.M. (1995). Engaging children of diverse backgrounds. In Knapp, M.S. (with N.E. Adelman, C. Mardner, H. McCollum, M.C. Needels, C. Padilla, P.M. Shields, B.J. Turnbull, & A.A. Zucker), Teaching for meaning in high-poverty classrooms. New York: Teachers College Press.

Sexton, P.C. (1961). Education and income: Inequalities in our public schools. New York: Viking Press.

Slavin, R.E., Madden, N.A., Dolan, L.J., Wasik, B.A., Ross, S., Smith, L., & Dianda, M. (1996). Success for All: A summary of research. Journal of Education for Students Placed At Risk, 1, 41-76.

Stevenson, H.W., Chen, C., & Uttal, D.H. (1990). Beliefs and achievement: A study of Black, White, and Hispanic children. Child Development, 61, 508-523.

Stringfield, S. (1995). Fourth-year evaluation of the Calvert School program at Barclay School. Baltimore, MD: Johns Hopkins University, Center for Social Organization of Schools.

Stringfield, S., & McHugh, B. (1998). Implementation and effects of the Maryland Core Knowledge Project: Third-year evaluation. Baltimore, MD: Johns Hopkins University, Center for Social Organization of Schools.

Stringfield, S., & McHugh, B. (1998). The third-year evaluation of the Calvert program at Carter G. Woodson Elementary School. Baltimore, MD: Johns Hopkins University, Center for Social Organization of Schools.

Stringfield, S., Millsap, M.A., Herman, R., Yoder, N., Brigham, N., Nesselrodt, P., Schaffer, E., Karweit, N., Levin, M., & Stevens, R. (with Gamse, B., Puma, M., Rosenblum, S., Beaumont, J., Randall, B., & Smith, L.) (1997). Urban and suburban/rural special strategies for educating disadvantaged children. Final report. Washington, DC: U.S. Department of Education.

Swift, J.S. (1986). The move to educational excellence does not mean a move to educational equality. Negro Educational Review, 24(3-4), 119-126.

Tallmadge, G.K. (1988, April). How and how much do biases resulting from regression to the mean affect outcome evaluations. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. Review of Educational Research, 45, 89-125.

Touliatos, J., Lindholm, B.W., & Rich, A. (1977). Interaction of race with other variables on achievement in school. Pyschology in the Schools, 14(3), 360-363.

Trotter, J.R. (1981). Academic attitudes of high achieving and low achieving academically able Black male adolescents. Journal of Negro Education, 50(1), 54-62.

Wang, M.C., Haertel, G.D., & Walberg, H.J. (1993). Educational resilience in inner cities. Philadelphia, PA: Temple University, National Education Center on Education in the Inner Cities. (ERIC Document Publication Service No. ED 399 312)

Winfield, L.F. (1986). Teacher beliefs toward academically at risk students in inner urban schools. The Urban Review, 18, 253-267.

Appendix A

Student-level Composites

Tables A1 through A5 below show the items representing each composite student factor along with the loadings for each year. Independent results are provided by cohort for the Student Questionnaire, the Student Profile instrument, and the Parent Questionnaire. The item factor loadings for each year also are displayed in the tables. Yearly item loadings that are noted "NA" indicate that the item was not available from the *Prospects* questionnaires that year. Although *Prospects* item numbers changed from year to year, to maintain consistency all questionnaire item numbers noted in the tables are the original 1991 numbers.

Table A1. Student-level Attributes; Student Questionnaire; Cohort 3

Factor	Student Questionnaire Item	Year		
		1991	1992	1993
Self-Concept	82A I feel good about myself	.47	.45	.52
	82D I am able to do things as well as most other people	.36	.40	.43
	82F I am satisfied with myself	.45	.42	.50
	82G I certainly feel useless at times (Reversed)	.36	.47	.52
	82H At times I think I am no good at all (Reversed)	.44	.51	.54
	82J I feel I don't have much to be proud of (Reversed)	.44	.48	.50
	83A Other students see me as popular	.52	.49	.50
	83B Other students see me as a good student	.68	.67	.67
	83C Other students see me as important	.64	.61	.62
	83D Other students see me as a trouble-maker (Reversed)	.48	.48	.41
Locus of Control	82B If I work really hard, I will do well in school	.64	.63	.57
	82C To do well in school, good luck is more important than hard work (Reversed)	.65	.66	.63
	82E Every time I try to get ahead, something or somebody stops me (Reversed)	.52	.60	.66
	82I When I make plans, I'm almost certain I can make them work	.30	.31	.42
Math Self-Efficacy	21 Self-assessed math ability	.77	.78	.79
	22A Math classwork was hard to learn (Reversed)	.69	.69	.71
	22B I had trouble keeping up with the math homework (Reversed)	.57	.61	.60
	22D I would do much better in math if I had more help (Reversed)	.73	.72	.70

Table A1. (cont.)

Reading Self-Efficacy	10 Self-assessed reading ability	.76	.75	.75
	11A Reading classwork was hard to learn (Reversed)	.61	.62	.61
	11B I had trouble keeping up with the reading homework (Reversed)	.54	.57	.57
	11D I would do much better in reading if I had more help (Reversed)	.76	.73	.73
Attitude Toward School	11C Reading class was fun	.57	.65	.64
	22C Math class was fun	.56	.64	.64
	43 Feelings about going to school everyday	.62	.61	.19
	44A You feel it is OK to be late for school (Reversed)	.53	.45	.73
	44B You feel it is OK to skip school for the whole day (Reversed)	.65	.54	.80
	44C You feel it is OK to be absent from school a lot (Reversed)	.64	.56	.82

Table A2. Student-level Attributes; Student Profile Questionnaire; Cohort 1

Factor	Student Profile Item	Year		
		1992	1993	1994
Student Engagement	3 Working up to potential	.59	.61	.62
	9B Attention Span	.84	.84	.83
	9C Motivation to learn	.88	.88	.87
	10A Completes homework assignments	.72	.73	.78
	10B Completes seatwork	.83	.82	.83
	10C Pays attention in class	.87	.87	.87
	10E Asks questions in class	.55	.55	.53
	10F Volunteers answers/takes part in class discussion	.63	.63	.64
	11A Works hard at school	.86	.85	.87
	11C Cares about doing well at school	.81	.82	.83

Table A3. Student-level Attributes; Student Profile Questionnaire; Cohort 3

Factor	Student Profile Item	Year			
		1991	1992	1993	1994
Student Engagement	3 Working up to potential	.62	.63	.63	.67
	9B Attention Span	.84	.84	.83	.83
	9C Motivation to learn	.88	.89	.89	.89
	10A Completes homework assignments	.79	.83	.84	.86
	10B Completes seatwork	.83	.83	.83	.84
	10C Pays attention in class	.87	.87	.87	.87
	10E Asks questions in class	.51	.52	.53	.53
	10F Volunteers answers/takes part in class discussion	.61	.62	.62	.59
	11A Works hard at school	.86	.87	.86	.87
	11C Cares about doing well at school	.84	.84	.84	.85

Table A4. Student-level Attributes; Parent Questionnaire; Cohort 1

Factor	Parent Questionnaire Item	Year	
		1992	1993
SES	76C Respondent's educational level	.82	.86
	80C Respondent's occupational prestige	.68	NA
	96C Spouse's educational level	.80	.85
	82C Spouse's occupational prestige	.70	NA
	100C Household income	.67	.77
	103 Composite of educational resources in the home	.65	NA
Parent Educational Expectations	49 How will child do in future grades?	.68	.70
	61 How likely will child graduate from HS?	.67	.66
	62 How far will child go in school?	.81	.81
	63 Done anything to save money for child's education after high school	.53	.53

Table A5. Student-level Attributes; Parent Questionnaire; Cohort 3

Factor	Parent Questionnaire Item	Year		
		1991	1992	1993
SES	76C Respondent's educational level	.81	.81	.85
	80C Respondent's occupational prestige	.70	.68	NA
	96C Spouse's educational level	.83	.82	.86
	82C Spouse's occupational prestige	.71	.69	NA
	100C Household income	.66	.68	.76
	103 Composite of educational resources in the home	.63	.67	NA
Parent Educational Expectations	49 How will child do in future grades?	.69	.69	.70
	61 How likely will child graduate from HS?	.68	.69	.70
	62 How far will child go in school?	.81	.81	.82
	63 Done anything to save money for child's education after high school	.53	.53	.52

Classroom-level Composites

Tables A6 through A11 below display the items representing each composite classroom-level factor along with the loadings for each year. Independent results are provided by cohort and by subject (math and R/E/LA) for the Classroom Teacher Questionnaire. Loadings from individual years that are noted as "NA" indicate that the item was not available for that year. Loadings noted as "DUP" indicate that the item was not used in the given year because a very similar, or duplicate, item was included in the composite. Finally, some variables were not used in the factors because they were constants. The loadings for these items that were not used are noted as "NU." Although *Prospects* item numbers changed from year to year, to maintain consistency most questionnaire item numbers noted in the tables are referenced by their original 1992 numbers. The exceptions are new items introduced in the 1993 questionnaires, which are referred to by their 1993 item numbers.

Table A6. Classroom-level Attributes; Classroom Teacher, R/E/LA; Cohort 1

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year		
		1992	1993	1994
Student-centered, Advanced-skills Approach	C-1B Frequency with which teacher uses trade books.	DUP	.43	.36
	C-1C Frequency with which teacher uses teacher-developed materials.	.23	.25	.39
	C-1G Frequency with which teacher uses life skills materials.	DUP	.31	.51
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	.16	.11	.27
	L-20D Frequency with which teacher uses children's newspapers and/or magazines.	.35	NA	NA
	L-20E Frequency with which teacher uses adult newspapers and magazines.	.39	NA	NA
	L-20F Frequency with which teacher uses language experience stories.	.46	NA	NA
	L-21D,F Main approach to teaching reading is whole language or language experience approach.	.27	NA	NA
	L-22A Emphasis in class given to fiction.	.43	NA	NA
	L-22B Emphasis in class given to poetry.	.49	NA	NA
	L-22C Emphasis in class given to mythology/folk tales.	.49	NA	NA
	L-22D Emphasis in class given to biography.	.53	NA	NA
	L-22E Emphasis in class given to drama.	.59	NA	NA
	L-22F Emphasis in class given to expository text.	.47	NA	NA
	L-22G Emphasis in class given to other non-fiction.	.53	NA	NA

Table A6. (cont.)

Student-centered, Advanced-skills Approach	L-22U Emphasis in class given to learning to differentiate fact from opinion.	.39	NA	NA
	L-22V Emphasis in class given to learning to draw inferences.	.41	NA	.58
	L-22W Emphasis in class given to learning to read charts and graphs.	.57	NA	NA
	L-22Y Emphasis in class given to learning to use and interpret life skills materials.	.43	NA	.56
	L-22Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.46	NA	NA
	L-22AA Emphasis in class given to developing oral communication skills.	.49	.33	.65
	L-22BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.52	NA	NA
	L-22CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.62	NA	NA
	L-22DD Emphasis in class given to developing students' confidence in their ability to read.	.48	NA	NA
	L-22EE Emphasis in class given to developing students' confidence in their ability to write.	.61	NA	NA
	L-22FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.60	NA	NA
	L-23B How often does the teacher have students do creative writing assignments?	.64	NA	NA
	L-23C How often does the teacher have students write factual reports?	.54	NA	NA
	L-23D How often does the teacher have students write about something they read?	.62	NA	NA
	L-23H How often does the teacher have students work with one another in pairs or small groups?	.52	NA	NA
	L-23I How often does the teacher have students participate in peer tutoring?	.41	NA	NA
	L-23N How often does the teacher have students give oral presentations or reports?	.55	NA	NA
	L-23O How often does the teacher have students publish their own writing?	.52	NA	NA
	L-23P How often does the teacher have students complete creative projects related to books they read?	.55	NA	NA
	L-24E How often are opportunities provided for skill and knowledge application to real life situations?	.39	NA	NA

Table A6. (cont.)

Student-centered, Advanced-skills Approach	F-8H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.47	.56
	F-8I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.66	.63
	F-8J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.71	.67
	F-8K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.61	.61
	F-8O Is keeping daily journals part of the teacher's instructional program?	NA	.33	.39
	F-8Q Is learning the writing process part of the teacher's instructional program?	NA	.56	.56

Table A7. Classroom-level Attributes; Classroom Teacher, R/E/LA; Cohort 3

		Year		
Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	1992	1993	1994
Student-centered, Advanced-skills Approach	C-1B Frequency with which teacher uses trade books.	DUP	.49	.50
	C-1C Frequency with which teacher uses teacher-developed materials.	.21	.33	.38
	C-1G Frequency with which teacher uses life skills materials.	DUP	.47	.44
	C-1H Frequency with which teacher uses A.V. equipment and materials.	.27	.31	.18
	L-20D Frequency with which teacher uses children's newspapers and/or magazines.	.44	NA	NA
	L-20E Frequency with which teacher uses adult newspapers and magazines.	.52	NA	NA
	L-20F Frequency with which teacher uses language experience stories.	.46	NA	NA
	L-21D,F Main approach to teaching reading is whole language or language experience approach.	.24	NA	NA
	L-22A Emphasis in class given to fiction.	.30	NA	NA
	L-22B Emphasis in class given to poetry.	.57	NA	NA
	L-22C Emphasis in class given to mythology/folk tales.	.50	NA	NA
	L-22D Emphasis in class given to biography.	.55	NA	NA

Table A7. (cont.)

Student-centered, Advanced-skills Approach	L-22E Emphasis in class given to drama.	.54	NA	NA
	L-22F Emphasis in class given to expository text.	.49	NA	NA
	L-22G Emphasis in class given to other non-fiction.	.46	NA	NA
	L-22U Emphasis in class given to learning to differentiate fact from opinion.	.41	NA	NA
	L-22V Emphasis in class given to learning to draw inferences.	.46	NA	.64
	L-22W Emphasis in class given to learning to read charts and graphs.	.47	NA	NA
	L-22Y Emphasis in class given to learning to use and interpret life skills materials.	.60	NA	.60
	L-22Z Emphasis in class given to learning to develop criteria on which to evaluate reading materials.	.59	NA	NA
	L-22AA Emphasis in class given to developing oral communication skills.	.56	.42	.57
	L-22BB Emphasis in class given to developing an appreciation for reading and the desire to read.	.48	NA	NA
	L-22CC Emphasis in class given to developing an appreciation for writing and the desire to write.	.66	NA	NA
	L-22DD Emphasis in class given to developing students' confidence in their ability to read.	.45	NA	NA
	L-22EE Emphasis in class given to developing students' confidence in their ability to write.	.62	NA	NA
	L-22FF Emphasis in class given to improving students' understanding of the value of reading in everyday life.	.46	NA	NA
	L-23B How often does the teacher have students do creative writing assignments?	.59	NA	NA
	L-23C How often does the teacher have students write factual reports?	.58	NA	NA
	L-23D How often does the teacher have students write about something they read?	.51	NA	NA
	L-23H How often does the teacher have students work with one another in pairs or small groups?	.46	NA	NA
	L-23I How often does the teacher have students participate in peer tutoring?	.48	NA	NA
	L-23N How often does the teacher have students give oral presentations or reports?	.57	NA	NA
	L-23O How often does the teacher have students publish their own writing?	.45	NA	NA

Table A7. (cont.)

Student-centered, Advanced-skills Approach	L-23P How often does the teacher have students complete creative projects related to books they read?	.57	NA	NA
	L-24E How often are opportunities provided for skill and knowledge application to real life situations?	.39	NA	NA
	F-8H Is learning to predict later events in a story part of the teacher's instructional program?	NA	.46	.68
	F-8I Is learning to understand the author's intent part of the teacher's instructional program?	NA	.62	.68
	F-8J Is comparing and contrasting different reading assignments part of the teacher's instructional program?	NA	.63	.69
	F-8K Is integrating reading with other curriculum areas part of the teacher's instructional program?	NA	.64	.60
	F-8O Is keeping daily journals part of the teacher's instructional program?	NA	.43	.46
	F-8Q Is learning the writing process part of the teacher's instructional program?	NA	.55	.49

Table A8. Classroom-level Attributes; Classroom Teacher, math; Cohort 1

		Year		
Factor	Classroom Teacher (math) Questionnaire Item	1992	1993	1994
Student-centered, Advanced-skills Approach	C-1C Frequency with which teacher uses teacher-developed materials.	DUP	.39	.35
	C-1F Frequency with which teacher uses manipulative materials.	DUP	.51	.49
	C-1G Frequency with which teacher uses life skills materials.	.37	.48	.57
	C-1H Frequency with which teacher uses A.V. equipment and materials.	DUP	.34	.33
	C-1M Frequency with which teacher uses calculators.	NA	.41	.40
	I-19E Frequency with which teacher uses manipulatives.	.35	NA	NA
	I-19F Frequency with which teacher uses teacher-made materials.	.33	NA	NA
	I-19I Frequency with which teacher uses audiovisuals/videos.	.40	NA	NA
	I-19J Frequency with which teacher uses calculators.	.36	NA	NA
	I-20B Emphasis in class given to problem solving.	.57	.16	.44
	I-20D Emphasis in class given to ratio and proportion.	.40	.47	.62
	I-20E Emphasis in class given to measurement and/or tables and graphs.	.59	.33	.55
	I-20F Emphasis in class given to geometry.	.43	.44	.69

Table A8. (cont.)

Student-centered, Advanced-skills Approach	I-20G Emphasis in class given to algebra.	.27	.54	.44
	I-20I Emphasis in class given to probability and statistics.	.34	.59	.54
	I-20L Emphasis in class given to learning skills and procedures needed to solve word problems.	.58	NA	NA
	I-20M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.66	NA	NA
	I-20N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.74	NA	NA
	I-20O Emphasis in class given to learning practical applications of math skills to everyday life.	.70	NA	NA
	I-20P Emphasis in class given to developing an appreciation for the importance of mathematics.	.67	NA	NA
	I-20Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.54	NA	.45
	I-20R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.59	NA	NA
	I-20S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.68	NA	.49
	I-21B How often does the teacher have students work with one another in pairs or small groups?	.46	NA	NA
	I-21C How often does the teacher have students participate in peer tutoring?	.41	NA	NA
	I-21H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.41	NA	NA
	I-21I How often does the teacher have students use calculators?	.37	NA	NA
	I-22E How often are opportunities provided for skill and knowledge application to real life situations?	.44	NA	NA

Table A9. Classroom-level Attributes; Classroom Teacher, math; Cohort 3

Factor	Classroom Teacher (math) Questionnaire Item	Year 1992	1993	1994
Student-centered, Advanced-skills Approach	C-1C Frequency with which teacher uses teacher-developed materials.	DUP	.44	.35
	C-1F Frequency with which teacher uses manipulative materials.	DUP	.57	.49
	C-1G Frequency with which teacher uses life skills materials.	.36	.58	.37
	C-1H Frequency with which teacher uses audiovisual equipment and materials.	DUP	.41	.28
	C-1M Frequency with which teacher uses calculators.	NA	.49	.36
	I-19E Frequency with which teacher uses manipulatives.	.47	NA	NA
	I-19F Frequency with which teacher uses teacher-made materials.	.38	NA	NA

Table A9. (cont.)

Student-centered, Advanced-skills Approach	I-19I Frequency with which teacher uses audiovisuals/videos.	.31	NA	NA
	I-19J Frequency with which teacher uses calculators.	.34	NA	NA
	I-20B Emphasis in class given to problem solving.	.56	.05	.53
	I-20D Emphasis in class given to ratio and proportion.	.44	.47	.64
	I-20E Emphasis in class given to measurement and/or tables and graphs.	.55	.30	.65
	I-20F Emphasis in class given to geometry.	.47	.45	.69
	I-20G Emphasis in class given to algebra.	.38	.48	.64
	I-20I Emphasis in class given to probability and statistics.	.43	.53	.70
	I-20L Emphasis in class given to learning skills and procedures needed to solve word problems.	.55	NA	NA
	I-20M Emphasis in class given to developing reasoning and analytic ability to solve unique problems.	.67	NA	NA
	I-20N Emphasis in class given to learning how to communicate ideas in mathematics effectively.	.69	NA	NA
	I-20O Emphasis in class given to learning practical applications of math skills to everyday life.	.66	NA	NA
	I-20P Emphasis in class given to developing an appreciation for the importance of mathematics.	.60	NA	NA
	I-20Q Emphasis in class given to developing students' confidence in their ability to do mathematics.	.54	NA	.37
	I-20R Emphasis in class given to diffusing math phobia and developing a perception of mathematics as being enjoyable.	.59	NA	NA
	I-20S Emphasis in class given to developing students' awareness of the practical applications of math skills to everyday life.	.65	NA	.35
	I-21B How often does the teacher have students work with one another in pairs or small groups?	.37	NA	NA
	I-21C How often does the teacher have students participate in peer tutoring?	.37	NA	NA
	I-21H How often does the teacher have students work with objects like rulers, counting blocks, or geometric shapes?	.43	NA	NA
	I-21I How often does the teacher have students use calculators?	.37	NA	NA
	I-22E How often are opportunities provided for skill and knowledge application to real life situations?	.47	NA	NA

Table A10. Classroom-level Attributes; CTBS/4 and Classroom Teacher, math; Cohort 1

Factor	CTBS/4 or Classroom Teacher (math) Questionnaire item	
High-Achieving Classmates	SSMCA Percent of students in baseline classroom who earned CTBS/4 math scores greater than the mean for the *Prospects* sample	.75
	I-4A-E Percent of students receiving instruction above grade level for math in 1992	.75

Table A11. Classroom-level Attributes; CTBS/4 and Classroom Teacher; math; Cohort 3

Factor	CTBS/4 or Classroom Teacher (math) Questionnaire item	
High-Achieving Classmates	SSTM Percent of students in baseline classroom who earned CTBS/4 math scores greater than the mean for the *Prospects* sample	.70
	I-4A-K Percent of students receiving instruction above grade level for math in 1991	.87
	I-4A-E Percent of students receiving instruction above grade level for math in 1992	.71

Table A12. Classroom-level Attributes; CTBS/4 and Classroom Teacher, R/E/LA; Cohort 1

Factor	CTBS/4 or Classroom Teacher (R/E/LA) Questionnaire item	
High-Achieving Classmates	SSTR Percent of students in baseline classroom who earned CTBS/4 reading scores greater than the mean for the *Prospect* s sample	.80
	L-5A-E Percent of students receiving instruction above grade level for reading in 1992	.80

Table A13. Classroom-level Attributes; CTBS/4 and Classroom Teacher, R/E/LA; Cohort 3

Factor	CTBS/4 or Classroom Teacher (R/E/LA) Questionnaire item	
High-Achieving Classmates	SSTR Percent of students in baseline classroom who earned CTBS/4 reading scores greater than the mean for the *Prospects* sample	.76
	R-4A-K Percent of students receiving instruction above grade level for reading in 1991	.70
	L-5A-E Percent of students receiving instruction above grade level for reading in 1992	.72

School-level Composites

Tables A14 through A17 below display the items representing the composite school factor, Instructional Resources, along with the loadings for each year. Independent results are provided by cohort and by subject for the Classroom Teacher questionnaire. Loadings from individual years that are noted as "NA" indicate that the item was not available for that year. Although *Prospects* item numbers changed from year to year, to maintain consistency all questionnaire item numbers noted in the tables are the original 1991 numbers.

Table A14. School-level Attribute; Classroom Teacher, math; Cohort 1

Factor	Classroom Teacher (math) Questionnaire Item	Year		
		1992	1993	1994
Instructional Resources	C-3A Notebooks and paper for students	.88	.74	.70
	C-3B Pens and pencils	.88	.71	.72
	C-3C Ditto master and access to the equipment	.85	.55	.46
	C-3D Photocopier for instructional materials	.90	.64	.55
	C-3E Overall availability of basic supplies	.91	.79	.74
	C-5 Sufficient materials for students instructional needs	.86	.57	.49

Table A15. School-level Attribute; Classroom Teacher, math; Cohort 3

Factor	Classroom Teacher (math) Questionnaire Item	Year			
		1991	1992	1993	1994
Instructional Resources	C-3A Notebooks and paper for students	.66	.78	.92	.79
	C-3B Pens and pencils	.65	.79	.91	.80
	C-3C Ditto master and access to the equipment	.58	.78	.91	.80
	C-3D Photocopier for instructional materials	.67	.81	.93	.89
	C-3E Overall availability of basic supplies	.80	.77	.94	.90
	C-5 Sufficient materials for students instructional needs	.55	.71	.90	.79

Table A16. School-level Attribute; Classroom Teacher, R/E/LA; Cohort 1

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year		
		1992	1993	1994
Instructional Resources	C-3A Notebooks and paper for students	.90	.72	.69
	C-3B Pens and pencils	.90	.70	.70
	C-3C Ditto master and access to the equipment	.87	.56	.47
	C-3D Photocopier for instructional materials	.92	.67	.57
	C-3E Overall availability of basic supplies	.93	.81	.73
	C-5 Sufficient materials for students instructional needs	.89	.56	.46

Table A17. School-level Attribute; Classroom Teacher, R/E/LA; Cohort 3

Factor	Classroom Teacher (reading/English/language arts) Questionnaire Item	Year			
		1991	1992	1993	1994
Instructional Resources	C-3A Notebooks and paper for students	.67	.76	.91	.84
	C-3B Pens and pencils	.66	.77	.89	.85
	C-3C Ditto master and access to the equipment	.59	.75	.88	.85
	C-3D Photocopier for instructional materials	.67	.77	.91	.89
	C-3E Overall availability of basic supplies	.80	.71	.90	.92
	C-5 Sufficient materials for students instructional needs	.55	.63	.86	.81

Appendix B

Tables B1 through B18 below provide summaries of the hierarchical model analyses of students' longitudinal achievement and engagement levels. Tables B1 through B12 are two-level models, with multiple test scores or engagement scores "nested" within students. Tables B13 through B18 are three-level models with multiple test or engagement scores nested within students, and students nested within schools. The descriptions and interpretations of these statistical models are provided in Section 3.

Table B1. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT, COHORT 1 ≥50%ILE

	Coefficient	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	595.38	1.32	449.83	***
Socioeconomic status, γ_{001}	18.44	1.15	16.09	***
Gender, γ_{002}	8.75	1.74	5.02	***
Black, γ_{003}	-16.29	2.77	-5.87	***
Latino, γ_{004}	-4.48	3.18	-1.41	
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	59.18	.65	91.17	***
Socioeconomic status, γ_{101}	.76	.56	1.34	
Gender, γ_{102}	-5.52	.85	-6.46	***
Black, γ_{103}	-1.90	1.36	-1.40	
Latino, γ_{104}	1.27	1.56	.81	

Note. $^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$

Table B2. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT, COHORT 1 ≥75%ILE

	Coefficient	*se*	*t ratio*	
Model for initial math concepts/applications scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	614.65	1.82	337.68	***
Socioeconomic status, γ_{001}	17.51	1.56	11.22	***
Gender, γ_{002}	7.52	2.42	3.11	**
Black, γ_{003}	-16.34	4.43	-3.69	***
Latino, γ_{004}	-.99	4.71	-.21	
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	56.27	.92	61.37	***
Socioeconomic status, γ_{101}	1.09	.79	1.39	
Gender, γ_{102}	-5.11	1.22	-4.20	***
Black, γ_{103}	-2.88	2.23	-1.29	
Latino, γ_{104}	-.07	2.37	-.03	

Note. *p<.05, **p<.01, ***p<.001

Table B3. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT, COHORT 1 ≥50%ILE

	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	609.02	1.41	432.36	***
Socioeconomic status, γ_{001}	17.29	1.23	14.03	***
Gender, γ_{002}	-11.13	1.87	-5.94	***
Black, γ_{003}	-11.05	2.94	-3.78	***
Latino, γ_{004}	1.68	3.69	.46	
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	48.51	.57	85.08	***
Socioeconomic status, γ_{101}	.91	.50	1.82	
Gender, γ_{102}	.64	.76	.84	
Black, γ_{103}	-3.53	1.19	-2.97	**
Latino, γ_{104}	1.61	1.49	1.08	

Note. *p<.05, **p<.01, ***p<.001

Table B4. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT, COHORT 1 ≥75%ILE

	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00}	637.81	1.99	320.81	***
Intercept, γ_{000}	14.02	1.78	7.88	***
Socioeconomic status, γ_{001}	-5.51	2.74	-2.001	*
Gender, γ_{002}	-9.27	4.89	-1.89	
Black, γ_{003}	3.09	5.53	0.56	
Latino, γ_{004}				
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}	42.17	.85	49.49	***
Intercept, γ_{100}	.45	.76	.60	
Socioeconomic status, γ_{101}	1.05	1.18	.94	
Gender, γ_{102}	-3.13	2.05	-1.49	
Black, γ_{103}	-.83	2.37	-.35	
Latino, γ_{104}				

Note. *p<.05, **p<.01, ***p<.001

Table B5. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING STUDENT ENGAGEMENT, COHORT 1 ≥50%ILE

	Coefficient	*se*	*t ratio*	
Model for initial engagement score, π_{0j}				
Model for mean initial status of average student, β_{00}	.46	.001	30.66	***
Intercept, γ_{000}	.15	.001	10.95	***
Socioeconomic status, γ_{001}	-.20	.02	-9.84	***
Gender, γ_{002}	0.02	.03	.76	
Black, γ_{003}	.09	.04	2.26	*
Latino, γ_{004}				
Model for growth rates, π_{1j}				
Model for growth rate of average student, β_{10}	-.03	.001	-3.22	**
Intercept, γ_{100}	.02	.001	2.66	**
Socioeconomic status, γ_{101}	-.02	.001	-1.56	
Gender, γ_{102}	.00	.02	.07	
Black, γ_{103}	.02	.02	1.14	
Latino, γ_{104}				

Note. *p<.05, **p<.01, ***p<.001

Table B6. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING STUDENT ENGAGEMENT, COHORT 1 ≥75%ILE

	Coefficient	*se*	*t ratio*	
Model for initial engagement score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	.62	.02	33.67	***
Socioeconomic status, γ_{001}	.09	.02	5.37	***
Gender, γ_{002}	-.16	.02	-6.63	***
Black, γ_{003}	.02	.05	.33	
Latino, γ_{004}	.08	.05	1.54	
Model for learning rates, π_{1j}				
Model for growth rate of average student, β_{10}				
Intercept, γ_{100}	-.03	.001	-2.25	*
Socioeconomic status, γ_{101}	.02	.001	2.32	*
Gender, γ_{102}	-.02	.001	-1.49	
Black, γ_{103}	.001	.03	.22	
Latino, γ_{104}	.04	.03	1.21	

Note. *p<.05, **p<.01, ***p<.001

Table B7. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT, COHORT 3 ≥50%ILE

	Coefficient	*se*	*t ratio*	
Model for initial total math scale score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	722.45	.78	920.64	***
Socioeconomic status, γ_{001}	10.59	.72	14.77	***
Gender, γ_{002}	-1.61	1.03	-1.56	
Black, γ_{003}	-7.22	1.75	-4.13	***
Latino, γ_{004}	-6.27	1.63	-3.85	***
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}				
Intercept, γ_{100}	20.63	.45	46.12	***
Socioeconomic status, γ_{101}	.21	.41	.51	
Gender, γ_{102}	-3.94	.59	-6.70	***
Black, γ_{103}	1.001	1.00	1.001	
Latino, γ_{104}	2.82	.93	3.03	**

Note. *p<.05, **p<.01, ***p<.001

Table B8. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT, COHORT 3 ≥75%ILE

	Coefficient	*se*	*t ratio*	
Model for initial total math scale score, π_{0j}				
Model for mean initial status of average student, β_{00}	737.63	.99	746.21	***
Intercept, γ_{000}	9.61	.90	10.65	***
Socioeconomic status, γ_{001}	-1.67	1.32	-1.27	
Gender, γ_{002}	-4.83	2.49	-1.94	
Black, γ_{003}	-5.36	2.40	-2.24	*
Latino, γ_{004}				
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}	20.20	.60	33.60	***
Intercept, γ_{100}	-.47	.55	-.85	
Socioeconomic status, γ_{101}	-3.08	.80	-3.84	***
Gender, γ_{102}	-.94	1.52	-.62	
Black, γ_{103}	2.51	1.46	1.72	
Latino, γ_{104}				

Note. *p<.05, **p<.01, ***p<.001

Table B9. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT, COHORT 3 ≥50%ILE

	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00}	725.36	.73	991.09	***
Intercept, γ_{000}	11.00	.69	15.99	***
Socioeconomic status, γ_{001}	-3.99	.99	-4.02	***
Gender, γ_{002}	-11.20	1.69	-6.61	***
Black, γ_{003}	-8.69	1.70	-5.11	***
Latino, γ_{004}				
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}	13.45	.39	34.14	***
Intercept, γ_{100}	.20	.37	.53	
Socioeconomic status, γ_{101}	-1.25	.53	-2.34	*
Gender, γ_{102}	.20	.91	-.21	
Black, γ_{103}	2.51	.92	2.75	**
Latino, γ_{104}				

Note. *p<.05, **p<.01, ***p<.001

Table B10. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT, COHORT 3 ≥75%ILE

	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	740.38	.93	796.97	***
Socioeconomic status, γ_{001}	9.03	.92	9.87	***
Gender, γ_{002}	-1.08	1.32	-.82	
Black, γ_{003}	-10.78	2.65	-4.07	***
Latino, γ_{004}	-8.13	2.68	-3.03	**
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}				
Intercept, γ_{100}	13.37	.53	25.27	***
Socioeconomic status, γ_{101}	-.41	.52	-.79	
Gender, γ_{102}	-1.08	.75	-1.44	
Black, γ_{103}	-.62	1.51	-.41	
Latino, γ_{104}	2.48	1.53	1.62	

Note. *p<.05. **p<.01. ***p<.001

Table B11. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING STUDENT ENGAGEMENT, COHORT 3 ≥50%ILE

	Coefficient	*se*	*t ratio*	
Model for initial engagement score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	.47	.001	31.88	***
Socioeconomic status, γ_{001}	.11	.001	8.03	***
Gender, γ_{002}	-.23	.02	-11.45	***
Black, γ_{003}	-.001	.03	-.21	
Latino, γ_{004}	.03	.03	1.001	
Model for growth rates, π_{1j}				
Model for growth rate of average student, β_{10}				
Intercept, γ_{100}	.00	.001	.15	
Socioeconomic status, γ_{101}	.03	.001	5.73	***
Gender, γ_{102}	-.04	.001	-5.27	***
Black, γ_{103}	-.03	.001	2.59	**
Latino, γ_{104}	-.00	.001	-.13	

Note. *p<.05. **p<.01. ***p<.001

Table B12. SUMMARY OF TWO-LEVEL HIERARCHICAL MODEL PREDICTING STUDENT ENGAGEMENT, COHORT 3 ≥75%ILE

	Coefficient	*se*	*t ratio*	
Model for initial engagement score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	.63	.02	37.26	***
Socioeconomic status, γ_{001}	.06	.02	3.52	***
Gender, γ_{002}	-.21	.02	-8.81	***
Black, γ_{003}	.04	.05	.82	
Latino, γ_{004}	.00	.05	.001	
Model for growth rates, π_{1j}				
Model for growth rate of average student, β_{10}				
Intercept, γ_{100}	-.001	.001	-1.11	
Socioeconomic status, γ_{101}	.03	.001	4.09	***
Gender, γ_{102}	-.03	.001	-3.37	***
Black, γ_{103}	-.04	.02	-2.02	*
Latino, γ_{104}	.03	.02	1.66	

Note. *p<.05, **p<.01, ***p<.001

Table B13. SUMMARY OF THREE-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS FROM HIGH-POVERTY PROSPECTS SCHOOLS AND FOR AFRICAN AMERICAN STUDENTS FROM SPECIAL-STRATEGIES WHOLE-SCHOOL REFORM SCHOOLS, COHORT 1

	Coefficient	*se*	*t ratio*	
Model for initial math concepts and applications scale score, π_{0j}				
Model for mean initial status of average student, β_{00}				
Intercept, γ_{000}	444.58	5.03	88.33	***
Special Strategies school, γ_{001}	-42.61	15.41	-2.75	**
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10}				
Intercept, γ_{100}	64.41	1.74	36.93	***
Special Strategies school, γ_{101}	10.30	5.31	1.94	

Note. *p<.05, **p<.01, ***p<.001

Table B14. SUMMARY OF THREE-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS FROM HIGH-POVERTY PROSPECTS SCHOOLS AND FOR AFRICAN AMERICAN STUDENTS FROM SPECIAL-STRATEGIES WHOLE-SCHOOL REFORM SCHOOLS, COHORT 1

	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	457.95	3.89	117.85	***
Special Strategies school, γ_{001}	-14.34	12.41	-1.15	
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	58.67	1.15	50.97	***
Special Strategies school, γ_{101}	8.69	3.74	2.33	**

Note. *p<.05, **p<.01, ***p<.001

Table B15. SUMMARY OF THREE-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS FROM HIGH-POVERTY PROSPECTS SCHOOLS AND FOR AFRICAN AMERICAN STUDENTS FROM SPECIAL-STRATEGIES WHOLE-SCHOOL REFORM SCHOOLS, COHORT 3

	Coefficient	*se*	*t ratio*	
Model for initial total math scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}				
Intercept, γ_{000}	644.68	2.60	248.02	***
Special Strategies school, γ_{001}	-9.18	7.23	-1.27	
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}				
Intercept, γ_{100}	22.29	1.02	21.89	***
Special Strategies school, γ_{101}	7.47	2.83	2.64	**

Note. *p<.05, **p<.01, ***p<.001

Table B16. SUMMARY OF THREE-LEVEL HIERARCHICAL MODEL PREDICTING READING ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS FROM HIGH-POVERTY PROSPECTS SCHOOLS AND FOR AFRICAN AMERICAN STUDENTS FROM SPECIAL-STRATEGIES WHOLE-SCHOOL REFORM SCHOOLS, COHORT 3

	Coefficient	*se*	*t ratio*	
Model for initial total reading scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}	641.84	2.57	249.73	***
Intercept, γ_{000}	-13.45	7.19	-1.87	
Special Strategies school, γ_{001}				
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}	11.77	1.24	9.46	***
Intercept, γ_{100}	7.75	3.46	2.24	**
Special Strategies school, γ_{101}				

Note. *p<.05, **p<.01, ***p<.001

Table B17. SUMMARY OF THREE-LEVEL HIERARCHICAL MODEL PREDICTING MATH ACHIEVEMENT FOR AFRICAN AMERICAN STUDENTS FROM HIGH-POVERTY PROSPECTS SCHOOLS AND FOR AFRICAN AMERICAN STUDENTS FROM SPECIAL-STRATEGIES WHOLE-SCHOOL REFORM SCHOOLS, COHORT 3 ≥ 50th %ILE

	Coefficient	*se*	*t ratio*	
Model for initial total math scale score, π_{0j}				
Model for mean initial status of average student, β_{00j}	695.62	1.34	518.93	***
Intercept, γ_{000}	7.51	5.05	1.49	
Special Strategies school, γ_{001}				
Model for learning rates, π_{1j}				
Model for learning rate of average student, β_{10j}	16.24	.93	17.42	***
Intercept, γ_{100}	5.38	3.51	1.53	
Special Strategies school, γ_{101}				

Note. *p<.05, **p<.01, ***p<.001